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licated 360 lbs. "Dimensions: His weight was 360 pounds; length from tip of nose to end of tail seven feet and one inch; breadth round the shoulders, thickest part, five feet two inches; length from tip of nose to end of jaw, covering the gills, two feet four inches; circumference of mouth, when braced open, three feet two inches; spread of tail from tip to tip, two feet three inches."

Dr. R. E. Rogers remarked upon the great interest excited by these specimens, and on motion a Committee was appointed to investigate their nature, and to procure from Mr. Davidson further information regarding their occurrence.

The thanks of the Academy were then ordered to be tendered to Mr. Davidson for his valuable donation received this evening.

Nov. 29th.

Mr. LEA, President, in the Chair.

Thirty-eight members present.

The Proceedings of the Biological Department for the present month were read.

The following papers, on report of the respective Committees, were ordered to be printed in the Proceedings.

Notes and Descriptions of Foreign Reptiles.

BY E. D. COPE.

TESTUDINATA.

The following species of Tortoises were brought by Mr. P. B. Duhaillu from equatorial West Africa, the present Autumn.

Kinixys erosa Gray. This curious species appears to be abundant throughout Gaboon, and the country of the Camma and Ogobai. Its range northward extends as far as the Gambia.

Sternotherus Derbianus Gray. Length, including head and neck, 14 in. 8 lin.; length of plastron, 6 in. 6 lin.; greatest breadth of do., 5 in.; breadth of head just before the tympani, 2 in. 5 lin.

Inhabits swamps in the Camma country.

This is probably the above named species, but judging from figures and descriptions, it approaches closely the *S. sinuatus* Smith, of South Africa, differing mainly in the form of the upper mandible, which is obtusely hooked in the former, bidentate in the latter. The habits of the two appear to differ; the S. African species inhabiting deep rivers, and remaining long at a time beneath the surface. It is considered by Dr. Gray (Catalogue Brit. Mus.) as identical with the *S. castaneus* Bell, but there is a manifest discrepancy between Smith's description, and the brief one of *castaneus* in the "Catalogue,"—principally with regard to the form of the vertebral scuta. The resemblance to the *S. Derbianus* is much closer, but judging as before, it is our impression that it is distinct from both.

HEPTATHYRA nob.

Cartilaginous border obsolete at the sides of the disc, and destitute of ossicles posteriorly. Sternum with two cartilaginous flaps, which cover the posterior extremities when retracted. Sternal callosities seven; one on each side corresponding to the closely connected hyo- and hyposternals, one to each of the

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epi- and xiphisternals, and one to the discoid entosternal. Hyo- and hyposternals united to the disc by suture, and separated from the episternals by a large cartilaginous interval. Head acute, parietal region depressed, frontal slightly arched. Nostrils not subdivided by a transverse process of the septum. Lips greatly developed, forming biangular flaps on each side of the mouth.

Heptathyra Aubryi. *Cryptopus Aubryi* Dumeril. *Revue et Magasin de Zoologie*; 1856, page 364.

Total length 2 feet, 6 in.; of sternum 15 in. 6 lin.; of head and neck 11 inches. Numerous specimens from the Fernando Vas river, Equatorial W. Africa.

The *Dogania subplana* of India doubtless exhibits the extreme of the Trionychoid modification of the Chelonian type, in the tardiness of the only partial union of the ribs into a carapacial disc, and the imperfect development of the sternal bones. There are but two callosities. *Aspidonectes* exhibits a superior grade of organization. The union of the ribs is more complete, a comparatively small part of their extremities extending beyond the disc in adult age. The sternal bones are better developed, especially the hyo- and xiphisternals. There are four external callosities.

Those species which agree in possessing cartilaginous flaps upon the posterior lobe of the sternum, are included by M. Dumeril in the single genus *Cryptopus*; but in some respects they are strikingly dissimilar. *T. punctatus* and *T. Senegalensis* are very interesting, as possessing in the free marginal ossicles the analogues of the marginal bones so universal among higher Chelonians. This far from unimportant peculiarity is wanting in the *T. frenatus* and *Petersii*; while the additional character of every sternal bone being protected by a corresponding external callosity (their number thus amounting to nine), proves the propriety of the generic name *Cycloderma* assigned by M. Peters. *T. Aubryi*, it is seen, agrees with the last in the absence of ossicles, but maintains the more typical Trionychoid peculiarity of one undivided callosity covering the hyo- and hyposternal bones. The extent of the union of these, (hæmapophyses,) with the disc, (pleurapophyses,) without lateral cartilaginous or osseous "appendage," offers as good an example of a normal "hæmal arch" as is to be found in the order.

The object of generic nomenclature being, as we understand it, to indicate the modifications of Nature's types and the sensible steps by which they approach each other, to ignore any such step appears to us unphilosophical. Hence we venture to propose for the species under consideration the generic appellation of *Heptathyra*.

Aspidonectes aspilus nob.—Head acute, plane, not sloping as in *Platypeltis*. Lips thin, not developed into flaps. Septum of the nasal orifice with a short process on each side. Ribs eight pairs, projecting in the adult about two inches beyond the disc. Disc subcircular, broadly truncate behind, vermiculately rugose. Vermiculations transverse along the sutures of the costal plates, longitudinal between. Vertebral line slightly depressed. Cartilaginous border extending two inches beyond the edge of the anterior sternal callosity, and 9 in. 10 lin. from the posterior margin of the disc, to within 3 in. 6 lin. of the end of the tail. Sternal callosities four. The posterior subtriangular, anterior and posterior angles divergent, the inner almost in contact. Anterior angle with an emargination corresponding to an angular process in the posterior border of the hyposternal. The interior and exterior borders of the anterior callosity made nearly right angles with its anterior edge. This is not perfectly transverse, so that the inner borders approach to within 1 in. 11 lin. of each other, they then round off and extend much farther posteriorly than the external borders. Episternal bones small, considerably separated, diverging anteriorly. Claws nearly straight, compressed, sharp at their inner edges, dirty white. Disc brown, vermiculations shaded with yellow. Border, extremities, neck and head dark brown, without spots or markings of any kind. Sternal callosities whitish.

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Length of disc 17 in.; of head and neck 19 in. 6 lin.; total, four feet. Length of sternum 20 in. 6 lin.

Habitat.—The Rembo and Ovenga rivers, tributaries of the Fernando Vas, Equatorial West Africa.

Not having at hand specimens of the *Aspidonectes niloticus* of W. and S. Africa, we have been unable to compare the only specimen of the *aspilus* with it; their differences are, however, sufficiently obvious. In the latter the sternal callosities are much smaller, and the anterior pair have their anterior and posterior borders nearly parallel, and the outline of the inner semicircular. The tail is shorter, and the colors are brownish green with white and yellow spots.

The Old World *Aspidonectes* possess eight pairs of ribs; we do not know how it is with the American species, as there are no authentic specimens in the Acad. mus., but our *Amyda* and *Glatypeltis* have but 7 pairs.

EMYDOSAURIA.

Crocodylus marginatus Geoffr.—Brought by Mr. DuChaillu, from the Ogobai. This species is principally abundant in the Cape colony, but is found in other parts of Africa.

OPHIDIA.

COLUBRIDÆ—CALAMARINÆ.

OLISTHENES nob.

Head scarcely distinct from the body, depressed, especially in front. Muzzle elliptical in outline, projecting much beyond the under jaw, as does also the superior labial region. At the posterior extremity of the superior maxillary bone are two curved teeth, larger than the other maxillaries, separated from them by an edentulous space, and grooved in front. Cephalic shields normal. Vertical broad; loreal small. Rostral prominent, broad, dividing the anterior frontals somewhat; not recurved. Preocular 1, postoculars 2. Urosteges and anal shield entire. Scales very smooth.

O. euphaus nob.—Scales subequally hexagonal on the flanks, more elongate on the back, very little imbricate; in nineteen rows. The rows diminish in number upon the tail, by two or more running together upon the dorsal region, thus forming short series of from four to six scales twice or thrice the usual width. Vertical plate broad, hexagonal, the anterior angle very obtuse, the posterior acute, dividing the occipitals. Superciliaries rather small, broader behind in consequence of the convergence of the sides of the vertical. Posterior frontals large, extending on the side of the head half way along the preocular. Anterior frontals rather small. Nostril between two nasals; the anterior large, separating the rostral and first labial, and nearly reaching the edge of the mouth. Rostral broad, triangular, depressed, slightly dividing the anterior frontals. Postoculars two. Superior labials eight, the first three small, the eye resting on the fourth and fifth. Pupil erect, elliptical. Inferior labials eight, the fourth largest, and in contact with the posterior geneials, of which there are two pairs.

Gastrosteges 205, anal 1, urosteges 75.

Color uniform brown, dark on the head and anterior part of the body, lighter posteriorly, and pale beneath.

Length 2 ft. 9 in. 6 lin. Tail 17 in. 6 lin.

Had Dr. Günther placed his *Hologerrhum philippinum* among the Calamarinæ, instead of Scytalian Colubridæ, we should have felt well satisfied in recording this as a second species of that genus; we are not positive, indeed, that it may not yet be so considered; but with our present knowledge we must distinguish it generically. The head of this serpent is very Calamarian in its indistinctness from the body, its depression and projecting rostral. Besides these, a broader vertical and more distinctly divided rostrals distinguish it from *Hologerrhum*.

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Rhinosimus (*D.* and *B.*) placed by Günther among the Calamarinæ, differs only in the keeled, recurved rostral, and *Rhinostoma Fitz.*, the only other genus with grooved maxillaries, has the recurved rostral, with divided urosteges.

The form and glossy smoothness of the *Olisthenes euphæus* admirably adapt it for making its way among pieces of bark, decayed logs, and other debris of the forest. Its native country is unknown to us, but as it was obtained in a jar containing a specimen of the species below mentioned, it probably came from South America.

CORONELLINÆ.

Liophis vittatus. *Coluber vittatus* Hallowell, Proceed. Acad. Nat. Sci., Vol. ii. p. 242. The serpent described as above, from specimens brought by Mr. Ashmead from Venezuela, is a true *Liophis*, resembling the *L. reginæ*, *tæniurus*, and *conirostris*, but without the transverse markings of the first and second, and the peculiar plating of the last. There are numerous specimens in the Acad. Mus. It does not appear to be known to European herpetologists.

Descriptions of two new species of Carboniferous Fossils, brought from Fort Belknap, Texas, by Dr. Moore.

BY W. M. GABB.

Myalina deltoidea.—Shell triangular, flattened, beaks narrow, tapering and curved anteriorly; cardinal margin slightly curved and nearly as long as the anterior edge; anterior edge gently sinuous; posterior edge nearly straight; basal edge rounded; umbones subangular; umbonal ridge running parallel with the anterior border losing itself near the basal edge; anterior umbonal slope perpendicular to the plane of the valve; posterior umbonal slope gentle, and extends to the posterior edge; inside, the cardinal third of the shell shows an alation which is invisible exteriorly; surface marked with indistinct concentric lamellæ.

This shell was found near Fort Belknap, either in the coal or in the stratum of dark blue shale overlying the coal. The specimens, consisting of a left valve, nearly perfect, and several fragments of the beaks showing the hinge well preserved, are replaced by pyrites.

Posidonia Moorei.—Shell subquadrangular, slightly gibbous, cardinal edge straight; beaks small, near the anterior edge, and slightly projecting beyond the cardinal line; umbones prominent, anterior edge rounded; posterior edge straight above, rounded below to meet the basal margin, which is regularly curved; surface marked by about twenty prominent round concentric ribs.

Locality and Position. From a buff colored limestone above the coal, near Fort Belknap.

Descriptions of supposed new species of Birds from Cape St. Lucas, Lower California.

BY JOHN XANTUS.

A sojourn of several months at Cape St. Lucas, Lower California, besides furnishing many species of birds not found by me at Fort Tejon,* has brought to light several species, which, as far as I have now the means of judging, seem to be entirely new. I subjoin descriptions of those which appear to be most decidedly undescribed birds, although it is very probable that a careful

* See Proceedings Acad. Nat. Sciences, August, 1859, for a list of birds collected by me at Fort Tejon, California.

examination of others of the collection made will result in the detection of additional ones.

I defer for the present any notice of the habits and peculiarities of these and other birds of the Cape, preferring to make this the subject of a special memoir, after a longer residence shall have enabled me to collect all the facts bearing on this subject.

PICUS LUCASANUS, Xantus.

General appearance that of *Picus nuttalli* and *scalaris*. Bill stout: as long as or longer than the head. Above black, banded transversely with white on the back and scapulars to the nape, the rump and outer tail feathers entirely black. quills with a row of white spots on each web: the outer square, the inner rounded, these spots on the tertials becoming transversely quadrangular. Beneath brownish white, with rounded black spots on the sides of the breast, passing behind on the flanks and under tail coverts into transverse bars. Greater inner wing coverts transversely barred. Outer two tail feathers white, with one, sometimes two terminal bars, next to which are one or two bars on the inner web only; third feather black, the outer web mostly white, with traces of a terminal black bar: sometimes there is a greater predominance of black on the inner web. Two white stripes on side of head, one starting above, the other below the eye with a tendency to meet behind and form a whitish collar on the nape. Male with the entire top of the head streaked with red, becoming more conspicuous behind; each red streak with a white spot at base. Feathers covering the nostrils smoky brown.

Length 7.15, extent 12.15, wing 4.00, bill above 1.00, middle toe and claw .80.

CAMPYLORHYNCHUS AFFINIS, Xantus.

Very similar to *C. brunneicapillus*. Above grayish olive, each feather on the back streaked with white, bordered externally by black. Upper tail coverts and upper surface of tail grayish, with indistinct transverse black bars, much broken; quills with a marginal row of rounded whitish spots on each web. Beneath white, sometimes very faintly tinged behind with yellowish brown; the whole under surface quite uniformly marked with rounded spots (more elongated anteriorly) and of much the same size. On the breast these spots are rather angular and generally do not cross both webs; posteriorly, however, they are more central, and several are sometimes strung along the shaft of the feather. These spots are larger and rounder on the under tail coverts. Tail feathers, excepting the two central black, each web banded from the base with alternating bars of white, six or more in each series. Top of the head uniform cinnamon brown, perhaps slightly paler towards the edges of the feathers; a white line from the nostrils over the eye to the nape, the white, however, streaked with black. Bill and legs dark brown, base of under mandible paler.

Length 7.50, extent 9.75, wing 4.35, tail 4.40, bill above .90, tarsus 1.10.

HARPORHYNCHUS CINEREUS, Xantus.

Very similar to *Mimus montanus*, with longer and more curved bill. The upper parts are grayish brown or cinereous with a faint trace of rufous on the rump. Beneath white with a tinge of brownish yellowish towards the vent; the breast and sides with sharply defined sagittate or subtriangular spots of brown, scarcely elongated on the sides, the shade of brown similar to, but darker than that of the back. The lateral tail feathers are tipped with white, the outer one sometimes edged with the same. There are two narrow dull whitish bands on the wings.

Length about 10 inches, wing 4.00, tail 4.75, bill above (in a straight line) 1.00.

This species is very abundant at the Cape, and its nests are found among the cactuses in large numbers. The eggs resemble those of the mocking birds much more than those of the rest of the genus.

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BRACHYRHAMPHUS HYPOLEUCUS, Xantus.

Bill slender and slightly curved, about half the length of head. Tarsus scarcely shorter than middle toe. Above dark brownish black, the edges of the feathers with a plumbeous tinge; the side of neck below, and the axillars with the concealed portion of the sides of the breast, ashy plumbeous. Entire under parts, including tail coverts and inside of the wings, pure white, this color extending on the sides of the head so as to include the eyes, the lids, however, are tinged with dusky; bill black; legs apparently reddish in life.

Length 10 inches, extent 15.80, wing 4.70, tail 1.80, bill above .70, gape 1.20, tarsus .85, middle toe 1.00.

This specimen is considerably weatherbeaten, and the old feathers of the upper parts are much worn, and bleached at the edges. The new ones are however as described.

Notes on a collection of Birds made by Mr. John Xantus, at Cape St. Lucas, Lower California, and now in the Museum of the Smithsonian Institution.

BY S. F. BAIRD.

Mr. Xantus, in transmitting to the Smithsonian Institution a collection of objects of Natural History made at Cape St. Lucas, Lower California, in the months of April, May, and June, 1859, has added descriptions of the species which he ascertained to be new by reference to the limited number of works at his command. These all appear to be really nondescript, and a careful comparison of the entire collection with supposed analogues from the north, shows differences in other species, entitling them to specific rank.

The examination of the collections of Mr. Xantus has proved of very great interest in elucidating the zoological peculiarities of the Cape, and especially in showing that its fauna is almost identical with that of the Gila River, and to a certain extent with that of the Rio Grande. It is an important fact also, that while these relationships are exceedingly intimate, there is almost none to the coast fauna of Upper California. As the birds were all collected during the spring months, after the migrating species had passed northward, they may be considered as especially characterizing the region. An examination of the list will show that of the forty-two kinds thus far received from Mr. Xantus, seven, or one-sixth, are peculiar to the Cape and probably new, while but two of the land birds which characterize the Pacific region of upper California are found there, all the other species being either distributed generally over the whole United States, or belonging especially to the Gila or Rio Grande regions, separately or collectively, and to that of the Southern Rocky Mountains.

Similar conclusions are to be derived from an examination of the other land vertebrates. The most characteristic mammal is the *Spermophilus harrisi*, heretofore only found in the Colorado desert. The *Perognathus penicillatus*, another Colorado species, is also met with. The *Macrotus californicus*, a leaf-nosed bat, heretofore only known from a single specimen taken at Fort Yuma, is very abundant. *Lepus californicus* and *trowbridgii*, *Mephitis bicolor* and *Vespertilio pallidus*, Le Conte, appear to be species common to the Cape and to Western Upper California, the two latter occurring also in Texas.

In the Reptilia, also, very interesting facts are to be observed. Here, as far as can be ascertained by a hasty examination, out of about twelve species of Saurians, and as many Ophidians, not one is found in Upper California, the species consisting (with the exception of a few new ones) of such as *Dipsosaurus dorsalis*, *Uta ornata* and *stansburiana*, *Sceloporus scalaris*, *Callisaurus ventralis*, *Stenodactylus variegatus*, &c. There is a *Phrynosoma* very similar to the "coronatum" of Upper California, but quite distinct. There is also a very large
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Ctenosaura. The serpents are *Ophibolus splendidus*, a new *Crotalus*, *Masticophis testaceus*? a Rio Grande *Nerodia*, *Arizona elegans*, *Scotophis Emoryi*, *Lamprosoma episcopum*, etc., or species very closely allied to them.

The Zoology of the east side of the gulf of California is not sufficiently well known to allow a satisfactory comparison with that of Cape St. Lucas; it is however probable that the Gila fauna does not extend as far down as the latitude of the Cape, being displaced by the northward extension of the fauna of Western Mexico. Even at Guaymas, species of birds and reptiles occur, of genera different from those of the United States, as for instance the genus *Dryophis* among the serpents.

It may safely be considered as very probable, that additional species of the Gila and Colorado regions will hereafter be detected at the Cape, and that a closer examination of the former localities will bring to light several of the species for the first time noticed in the Cape collection of Mr. Xantus.

What the causes are which have produced this peculiar distribution of animal life on the Cape, it is at present impossible fully to elucidate. The mountain crests which extend longitudinally along the peninsula might form an impassable barrier to the passage of species from one coast to the other, but as there appears to be no greater obstacle to the extension southward to Cape St. Lucas from the coast region of Upper California, than from the mouth of the Colorado along the east side of the peninsula, we would expect to find a much greater mixture of species at the Cape than really exists. No information is at present at our command as to the zoology of the interior of the peninsula. It is, however, quite probable that the narrow vallies enclosed between the mountainous sides of the peninsula may have species widely different from either those of the Cape itself, and of Upper California, and more analogous to those of Mazatlan and its vicinity.

The region in which Mr. Xantus obtained the birds hereafter enumerated, is one which at first sight would not seem a very promising field for exploration. The shore is sandy for about a quarter of a mile inland, whence a cactus desert extends for a width of about six miles up to the high mountains on the West and North. The *Cereus giganteus* is a prominent feature in this peculiar vegetation, rising occasionally to a height of sixty or more feet. The ground is covered for miles with a saline efflorescence, painful to the eye, into or through which the feet sink to a considerable distance. There is no fresh water nearer than San José, a distance of twenty-eight miles. The region, though in the spring and summer inhabited almost exclusively by land birds, is said in the rest of the year to be the resort of innumerable water fowl and waders, among which Mr. Xantus will doubtless find many rare species.

Before proceeding to an enumeration of the summer birds of Cape St. Lucas, it may be well to state that they illustrate in a remarkable degree the law derived from an examination of large series of specimens in the Smithsonian museum, and frequently referred to in the ninth volume of the Pacific R. R. Report; namely, that whenever species have a wide range in latitude as resident birds or as summer visitors, the farther North the species is found breeding, the larger it is, and vice versa. The same principle applies, though in less marked degree, to an increasing altitude in the same latitude. The difference in size between the same species of bird breeding at Cape St. Lucas and in the Colorado Valley, or in the more northern Rocky Mountains, is very striking, so much so as readily to induce the impression of a difference in the species.

The following table will illustrate more fully what has been said in regard to the geographical distribution and character of the species. It will be seen that all the characteristic land species of the Cape (all supposed to be new excepting *Colaptes chrysoides*) are exceedingly abundant, breeding in large numbers.

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LIST OF SPECIES.	Cape St. Lucas.	Coast region of Upper California.	Fort Yuma and Lower Gila.	Southern R. Mts., and El Paso.	Valley of Rio Grande toward its mouth.	South Atlantic and Gulf States.	Northern Atlantic States.	South America.	REMARKS.
1. <i>Tinnunculus sparverius</i> , <i>Vieill.</i>	*	*	*	*	*	*	*	*	Very abundant.
2. <i>Bubo virginianus</i> , <i>Bonap.</i>	*	*	*	*	*	*	*	*	" "
3. <i>Picus lucasanus</i> , <i>Xantus.</i>	*	*	*	*	*	*	*	*	" "
4. <i>Centurus uropygialis</i> , <i>Baird.</i>	*	*	*	*	*	*	*	*	Abundant.
5. <i>Colaptes chrysoides</i> , <i>Muhl.</i>	*	*	*	*	*	*	*	*	" "
6. <i>Geococcyx californianus</i> , <i>Baird.</i>	*	*	*	*	*	*	*	*	" "
7. <i>Chordeiles texensis</i> , <i>Laur.</i>	*	*	*	*	*	*	*	*	" "
8. <i>Myiarchus mexicanus</i> , var. <i>Baird.</i>	* ¹	* ²	* ²	* ²	* ²	* ²	* ²	* ²	One specimen.
9. <i>Sayornis nigricans</i> , <i>Bonap.</i>	*	*	*	*	* ²	*	*	*	" "
10. <i>Empidonax obscurus</i> , <i>Baird.</i>	*	*	*	*	*	*	*	*	Rather common.
11. <i>Hirundo thalassina</i> , <i>Swain.</i>	*	*	*	2*	3	*	*	*	" "
12. <i>Progne purpurea</i> , <i>Boie.</i>	*	*	*	*	*	*	*	*	Common.
13. <i>Phainopepla nitens</i> , <i>Sclater.</i>	*	4	*	* ²	*	*	*	*	Not common.
14. <i>Mimus polyglottus</i> , <i>Boie.</i>	*	*	*	*	*	*	*	*	Very abundant.
15. <i>Harporhynchus cinereus</i> , <i>Xantus.</i>	*	*	*	*	*	*	*	*	" "
16. <i>Campylorhynchus affinis</i> , <i>Xantus.</i>	*	*	*	*	*	*	*	*	One specimen.
17. <i>Polioptila melanura</i> , <i>Laur.</i>	*	*	*	*	*	*	*	*	Very common.
18. <i>Paroides flaviceps</i> , <i>Baird.</i>	*	*	*	*	*	*	*	*	Common.
19. <i>Carpodacus frontalis</i> , <i>Gray.</i>	*	* ²	*	*	*	*	*	*	One specimen.
20. <i>Chondestes grammacus</i> , <i>Bonap.</i>	*	*	*	*	*	*	*	*	Two specimens.
21. <i>Zonotrichia leucophrys</i> , <i>Swain.</i>	*	*	*	*	*	*	*	*	" "
22. <i>Calamospiza bicolor</i> , <i>Bonap.</i>	*	*	*	*	*	*	*	*	One specimen.
23. <i>Guiraca melanocephala</i> , <i>Swain.</i>	*	*	*	*	*	*	*	*	Three specimens.
24. <i>Cyanospiza versicolor</i> , <i>Baird.</i>	*	*	*	*	*	*	*	*	Common.
25. <i>Pyrrhuloxia sinuata</i> , <i>Bonap.</i>	*	*	*	*	*	*	*	*	Very abundant.
26. <i>Cardinalis igneus</i> , <i>Baird.</i>	*	*	*	*	*	*	*	*	" "
27. <i>Pipilo albigula</i> , <i>Baird.</i>	*	*	*	*	*	*	*	*	One specimen.
28. <i>Agelaius</i>	*	*	*	*	*	*	*	*	Very common.
29. <i>Icterus parisorum</i> , <i>Bonap.</i>	*	*	*	2*	5	*	*	*	Three specimens.
30. " <i>cucullatus</i> , <i>Swain.</i>	*	*	*	*	*	*	*	*	Not common.
31. <i>Cyanocitta californica</i> , <i>Strickl.</i>	*	*	*	*	*	*	*	*	Very abundant.
32. <i>Melospiza leucoptera</i> , <i>Bonap.</i>	*	*	*	*	*	*	*	*	" "
33. <i>Chamaepelia</i> var. <i>pallidescens</i> , <i>Baird.</i>	*	*	*	*	*	*	*	*	Common.
34. <i>Lophortyx californica</i> , <i>Bonap.</i>	*	*	*	*	*	*	*	*	One specimen.
35. <i>Garzetta thula</i> , <i>Bonap.</i>	*	*	*	*	*	*	*	*	" "
36. <i>Agialtis vociferus</i> , <i>Cassin.</i>	*	*	*	*	*	*	*	*	One specimen.
37. <i>Calidris arenaria</i> , <i>Illiger.</i>	*	*	*	*	*	*	*	*	" "
38. <i>Fulica americana</i> , <i>Gmel.</i>	*	*	*	*	*	*	*	*	" "
39. <i>Graculus dilophus</i> , <i>Gray.</i>	*	*	*	*	*	*	*	*	" "
40. <i>Thalassidroma melania</i> , <i>Bonap.</i>	*	*	*	*	*	*	*	*	One specimen.
41. <i>Blasippus heermanni</i> , <i>Bonap.</i>	*	*	*	*	*	*	*	*	" "
42. <i>Brachyrhampus hypoleucos</i> , <i>Xan.</i>	*	*	*	*	*	*	*	*	One specimen.
	42	18	21	20	18	8	8	4	

An examination of the table will show that seven (all new) out of forty-two species may as yet be considered as peculiar to Cape St. Lucas. Two land birds and two water birds belong to the coast region of Western North America; two species are peculiar to the Lower Gila and Colorado, (*Centurus uropygialis* and *Colaptes chrysoides*), although both may be found in time as far east as El Paso. On the other hand, fourteen of the species occur in the region extending from the Gila to the lower Rio Grande, none of them found in Upper California, although several stretch northward in the Rocky Mountain

¹ If this large-billed bird be considered as distinct (*M. pertinax*) from the true *M. mexicanus*, it will be entered only in the Cape column.

² Found in the extension of the mountains south-east into Mexico

³ Extending northward as far as Fort Bridger.

⁴ Confined to the southern end of this region; at Fort Tejon.

⁵ Found on the Pecos only in this region.

region considerably beyond the latitude of San Francisco. But a single species (*Garzetta thula*,) belongs to the South American fauna; and this may not be the same bird as the Chilian.

One of the most striking facts of all is that not a single land animal has been identified as found in Mexico and not in the United States also. Not a single bird of the Western Tierra Caliente of Mexico has been yet met with, however abundant it may be on the opposite side of the gulf, not much over a hundred miles across.

The case, however, is quite different with the marine invertebrates, which, as might be expected, are very closely related to those of Western Mexico. The accompanying note* from Mr. Stimpson will illustrate the character of the crustacea of the Cape.

List of Birds collected from the middle of April to the middle of July, 1859.

1. *TINNUNCULUS SPARVERIUS*, Vieillot.

2. *BUBO VIRGINIANUS*, Bonaparte.

3. *PICUS LUCASANUS*, Xantus.—This species is intermediate in character between *P. scalaris* and *P. nuttalli*, resembling them very closely, and belonging to the same division of the genus. It has the brown feathers on the nostrils, the whole top of the head spotted with red, and the predominance of white on the cheeks of the former, and the deficiency of black bars in the white of the tail feathers of the latter; the black bars, except at the tip, not crossing the outer web, and the outer web of the third feather being almost entirely white. The bill and feet, the latter especially, are very stout and large, much more so than in the others, in *nuttalli*, especially. In size, it is about intermediate between the other two.

4. *CENTURUS UROPYGIALIS*, Baird.—As in the other woodpeckers, the specimens of this species have a peculiar weather-beaten and dull appearance.

5. *COLAPTES CHRYSOIDES*, Malherbe.—This bird is only known from an imperfect description by Malherbe of a single female specimen, and this author was ignorant of the peculiar feature of the male of this species, namely, in it combining the characters of both *C. auratus* and *mexicanus*. Thus, with ashy throat and cheeks, and broad, red moustache and absence of nuchal red of the latter, the shafts and under surface of the wing and tail are gamboge yellow, as in *C. auratus*. The tail feathers are more tipped with black than in either species, the outer being of this color for more than the terminal inch, and along most of the outer web. The jugular collar and the spots on the breast are considerably larger than in the other species. The top of the head is light yellowish brown. In size, this species is considerably inferior to that of *C. auratus*.

C. mexicanoides of Lafresnaye has the shafts red.

In the Report on birds of Pacific R. R., Series IX. p. 125, I refer to a female *Colaptes*, collected by Mr. Schott, on the line of the Mexican boundary survey, as possibly of this species. This proves now to be the fact, and extends the range of the species to the valley of the Gila River. The following

* More than sixty species of Crustacea have already been collected by Mr. Xantus, more than half of which are new. They belong to the genera *Pisa*, *Thoe*, *Micippa*, *Mithrax*, *Pericera*, *Lambrus*, *Atergatis*, *Xanthus*, *Pilumnus*, *Ozius*, *Eriphia*, *Ocyrops*, *Grapsus*, *Pachygrapsus*, *Nautilograpsus*, *Calappa*, *Dromidia*, *Petrolisthes*, *Remipes*, *Albunea*, *Lepidops*, *Cenobita*, *Calcinus*, *Eupagurus*, *Alpheus*, *Palaeon*, *Livoneca*, *Ligae*, *Orchestia*, *Hyperia*, and several new ones. This new and rich Carcinological Fauna differs entirely from that of the Upper Californian Coast, not a single species being identical, and approximates more nearly to that of the Western coast of Mexico, from Guaymas to Acapulco; also in some degree to that of the Gallapagos Islands. Nearly all of the species described by De Saussure as inhabiting the Bay of Mazatlan, (Rev. et Mag. de Zoologie v. 354-368), have been found by Mr. Xantus at Cape St. Lucas.

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detailed description of this little known species may be of interest: Above yellowish ash transversely barred with black. Chin, throat, and sides of head clear ash; under parts white: a broad pectoral crescent, and rounded spots on remaining under parts black. Top of head light brown. Shafts of wing and tail feathers gamboge yellow. Tail black; the basal portion yellow; the outer feathers uniformly black on the exposed terminal half, including the shafts. No red on the nape. Bill black. Iris light brown. Male with a broad, red moustache. No trace of a moustache in the female.

Length of male about 11.00; wing 5.50; tail 4.50; bill above 1.50.

6. *GEOCOCYX CALIFORNIANUS*, Baird.

7. *CHORDEILES TEXENSIS*, Lawrence.

8. *MYIARCHUS MEXICANUS*, Baird.—This bird does not appear exactly the same with the species of the United States and Mexico, although I can see no other difference than a rather stouter bill. This, however, appears to be a constant character, and may one day cause its separation as a species (*M. pertinax*, Baird.)

9. *SAYORNIS NIGRICANS*, Bonaparte.

10. *EMPIDONAX OBSCURUS*, Baird.

11. *HIRUNDO THALASSINA*, Swainson.—Much smaller than specimens from Oregon.

12. *PROGNE PURPUREA*, Boie.

13. *PHAINOPEPLA NITENS*, Solater.

14. *MIMUS POLYGLOTTUS*, Boie.—The specimens do not exhibit the same elongation of the tail as remarked in skins from Upper California. The tail appears, however, a little longer than in specimens from the Atlantic States.

15. *HARPORHYNCHUS CINEREUS*, Xantus.—This species is very similar in color and markings to *Mimus montanus*, although rather larger, with a considerably longer and more curved bill. It is nearly as large as *H. longirostris*, the bill of about the same length, though more curved. It differs from it, however, in the grayish plumage above, in the whitish tips to the tail, and in having short sagittate spots beneath, instead of elongated black ones. Besides the longer bill and other features, it lacks the rufous tinge of upper parts seen in *H. rufus*. It is smaller than *H. curvirostris*, the spots beneath much more distinct and sagittate. They are darker than the back, instead of being of the same color.

As already remarked, the shade of the coloration and pattern of marking are almost precisely those of *Mimus montanus*, while the bill is much like that of *H. longirostris*.

16. *CAMPYLORHYNCHUS AFFINIS*, Xantus.—This species is about the size of *C. brunneicapillus*, and resembles it closely in general appearance. The comparison of an extensive series of both will, however, exhibit unmistakable differences.

The anal region and thighs of *brunneicapillus* have a strongly fulvous tendency, (nearly wanting in *affinis*,) and the spots beneath are much smaller, in fact, scarcely more than shaft lines; on the throat and jugulum, on the contrary, the spots occupy almost the entire breadth of the feather, very conspicuously larger than the others. In *C. affinis* the spots beneath are very nearly of the same size, being larger on the belly and smaller on the throat than in the other species: the latter but little the larger.

The lateral tail feathers in *brunneicapillus* are black, all with a subterminal band of white: the external feather has both webs banded with white throughout. The next has a trace of a second terminal band, and there are

bands on the whole of the outer web. The remaining feathers, except the central ones, are banded only on the outer webs; sometimes not then, when the whole feather is black, except at the tip. In the other species, *C. affinis*, all the feathers (except the central) are banded uniformly with white from the base, there being from six to eight on each web, which alternate with each other, the bands being about equal to their black interspaces. The streaks on the back are more distinctly defined than in *brunneicapillus*, and the head above is of a clear, reddish chocolate, instead of the darker brown of the latter species.*

17. *POLIOPTILA MELANURA*, Lawrence.—The single specimen of this species sent in by Mr. Xantus has the tail feathers more broadly edged and tipped with white, and the gray of the back lighter and clearer than in specimens in the Smithsonian collection from the Gila region.

18. *PAROIDES FLAVICEPS*, Baird.—Specimens are much smaller than those from the Gila and Rio Grande. The yellow on the head also is brighter. In some there is a tinge of red in the yellow of the crown. Wing of male 1.90 inches.

19. *CARPODACUS FRONTALIS*, Gray.—Very similar to northern specimens, but smaller. The resemblance to some Rocky Mountain skins in the Smithsonian collection is very close.

20. *CHONDESTES GRAMMACA*, Bonap.

21. *ZONOTRICHIA LEUCOPHRYS*, Swains.—It is an interesting fact that this species should be found at the Cape, instead of *gambelii*. It is to be borne in mind that both are found along the Rocky Mountains as far south as El Paso, and that *Z. leucophrys* has not yet been detected in Upper California.

22. *CALAMOSPIZA BICOLOR*, Bonap.—This species has not yet been detected in Upper California.

23. *GUIRACA MELANOCEPHALA*, Swainson.

24. *CYANOSPIZA VERSICOLOR*, Baird.—The female of this species is very similar to those of *C. cyanea* and *amæna*. From the latter it is distinguishable by the absence of traces of two white bands on the wings, and from both by the legs being black instead of dark brown. The bill appears to be more curved, and the legs larger than in the other species.

25. *PYRRHULOXIA SINUATA*, Bonap.—Smaller than Texan specimens.

* The following account of common and specific characters may serve to define the species better.

Head above uniform brown; back and scapulars grayish brown, each feather with a central white streak bordered externally by black; upper tail coverts and upper surface of inner tail feathers, obscurely marked transversely with grayish and blackish, other tail feathers black, barred with white. A white streak over the eye and along side of neck. Body beneath white, with rounded spots of black; strongly marked on the under tail coverts.

C. BRUNNEICAPILLUS.—Head above dark brown; black spots on the throat and breast, large, occupying the whole breadth of the end of the feather, the spots on the remaining under parts abruptly much smaller and less numerous. Crissum lower belly and flanks strongly tinged with pale rufous. The black tail feathers, except the outer, scarcely barred with white, except as a subterminal bar.

C. AFFINIS.—Head above dull light chocolate brown; black spots beneath of much the same size and strongly marked on nearly every feather, and but little if any more conspicuous on the jugulum than elsewhere; on the jugulum they are about opposite the middle of the feather (not at the tip) and do not cross both webs; very little trace of rufous any where beneath. All the black tail feathers are crossed with white bands on both webs throughout their whole extent. Length 7.50; wing 3.50; tail 3.25; bill above .80; tarsus 1.00.

26. *CARDINALIS IGNEUS*, Baird, n. s.—A Cardinal very abundant at the Cape; appeared at first sight to be the same with the *C. virginianus*. A comparison, however, of a large number of males with as many from the eastern United States and Texas, shows a difference, in the entire absence of black on the forehead between the nostrils, the red of the head coming down to the base of the culmen. The black of the side of the bill extends to the nostrils, but not between them on the forehead as in *virginianus*. The bill is larger and decidedly more tumid. The size, shape and colors are as in *virginianus*, the bill too being red, instead of white as in *phœniceus*.

27. *PIPILO ALBIGULA*, Baird, n. s.—Specimens of a *Pipilo* with the general aspect of *mesoleucus*, exhibit a constant difference in a rather greater extent of white on the middle of the belly. The chin and upper part of the throat are bounded by a border of dusky spots, which does not extend as far towards the jugulum as in *mesoleucus*, and is much better and more regularly defined below, not being broken up irregularly. The space enclosed by this border of spots is yellowish brown on the chin as in *mesoleucus*, but inferiorly on the throat and in front of the spots it becomes nearly, and sometimes quite white, in decided contrast to the chin color. The bill appears to be more slender. Both forms agree in having the chestnut hood, the dusky spot on the breast, and the white of the belly distinguishing them from *P. fuscus*. The size is that of *mesoleucus* from the Rocky Mountains, and inferior to that of *fuscus*.

28. *AGELAIUS* ——. — A skin of a female *Agelaius* does not afford characters sufficient to determine a species. It was collected at San José, some ten miles northeast of the point of the cape.

29. *ICTERUS PARISORUM*, Bonap.—The female of this species is olivaceous above, (lighter on the rump,) and yellow beneath. The tail feathers, except the middle ones, are greenish yellow, becoming grayish brown on the terminal third (which is black in the male,) and narrowly tipped with whitish. There are two distinct bands of white on the wing. The lores and throat are tinged with dusky.

30. *ICTERUS CUCULLATUS*, Swainson.

31. *CYANOCITTA CALIFORNICA*, Strickland.—Rather smaller than more northern specimens, but apparently similar. There is, however, a tendency to the blue tinge of the under tail coverts seen in *C. woodhousii*, Baird.

32. *MELOFELIA LEUCOPTERA*, Bonap.—A very abundant species.

33. *CHAMÆPELIA PASSERINA*? var. *PALLESCENS*, Baird.—A comparison of an extensive series of *Chamæpelia* from Cape St. Lucas, with a similar one from the Southern Atlantic States, shows constant differences in the shade of coloration which may be of importance. The pattern is the same, but the shades are considerably lighter. The chin and anal region are nearly white, the color of the latter considerably lighter than that of the belly anterior to it, instead of being much the same. The amethystine spots on the wings are smaller and apparently less numerous. The bill seems darker, all the hard portion being black, instead of this color being confined to the tip. The tertials do not appear to extend so far along the wing, falling short of the tip by about three-quarters of an inch, scarcely reaching to the end of the eighth primary, instead of to within less than half an inch or to the end of the fifth or sixth primary. The tarsi appear stouter in the Cape bird.

34. *LOPHORTYX CALIFORNICUS*, Bonap.

35. *GARZETTA THULA*, Bonap.?—A white heron (No. 273) closely allied to *G. candidissima* appears to be immature, being without the plumose, occipital and dorsal feathers. It differs from *candidissima* in the longer bill (3.50 in. above, instead of 3.15), and in the shorter tarsi (3.60 instead of 4.05.) The 1859.]

toes too are shorter. The lower mandible is yellow along the entire line of the gonys, and laterally for the basal half. The toes, though evidently not black originally like the tarsi, are yet of a greenish black in the dried specimen, quite distinct from the decided yellowish of the other species.

An examination of the adult will be necessary to show whether this bird is really the *thula* of Chili or not. It is certainly larger and otherwise different from specimens brought from Chili by Lt. Gilliss.

36. *ÆGIALITIS VOCIFERUS*, Cassin.

37. *CALIDRIS ARENARIA*, Illiger.

38. *FULICA AMERICANA*, Gmelin.

39. *GRACULUS DILOPHUS*? Gray.—Immature.

40. *THALASSIDROMA MELANIA*, Bonap.—A single specimen of this species was collected by Mr. Xantus. I have seen one other obtained near San Francisco by Mr. Gruber of that city.

41. *BLASIPUS HEERMANNI*, Bonaparte.—Young birds only collected.

42. *BRACHYRHAMPHUS HYPOLEUCUS*, Xantus.—The occurrence of a species of this genus as a summer visitor to a point so far south as Cape St. Lucas, or at the latitude of less than 23° N. is a fact of much interest, when we remember that the auks have all been considered more or less arctic birds. The affinities of the new species appear to be chiefly with *B. marmoratus*, although it lacks the white scapulars, has the inside of the wing white, instead of sooty, and much longer tarsi. Its relations to *B. brachypterus*, *kittlitzii* and *wrangeli* of Brandt it is difficult to determine from the short descriptions of that author. It comes closest to the description of *B. brachypterus*, but the tarsus is shorter than the middle toe, not longer.

MINERALOGICAL NOTES.—No. II.

BY WILLIAM JOHNSON TAYLOR.

The number of interesting minerals which have been referred to me by gentlemen of the Academy, are but partially described in the present paper. Descriptions and analyses of several minerals of interest, including at least one new species, I have been obliged to defer for a subsequent communication to the Academy.

CLAYITE—a new mineral.

This mineral is remarkable as being near galena in form and composition, being a sulphide of lead with about twenty-five per cent. of arsenic, antimony and copper, forming the third of a series of which galena is the first, cuproplumbite (found in an adjoining State, Chili) is second, and which contains some copper and sulphur, but not any antimony and arsenic. In the cuproplumbite the lead is partially replaced by copper, and in Clayite this also is the case, but a part of the sulphur is also replaced by antimony and arsenic.

Clayite is remarkable as containing so small a per centage of sulphur—between eight and nine per cent. only. It occurs in small monometric crystals, the predominating form of which appears to be a combination of the tetrahedron with the dodecahedron; they occur as a coating on a layer of quartz, about a thirty-second of an inch in thickness, which incrusts the massive portion of the mineral. This massive portion of the mineral is filled with minute quartz crystals, which are microscopic, but the presence of this quartz and the existence of minute fissures has permitted the mineral to be somewhat acted upon by the air, and to suffer a probably partial decomposition, as is evinced

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by the decolorization of the surface by a bronze tarnish and the occurrence in the crevices of the blue Covellite (?).

The crystals of Clayite do not appear to be in the least acted upon. In color they are a blackish gray, are quite small, the form only to be distinguished by a strong pocket lens, and no cleavage observed. Rubbed in an agate mortar, they are quite malleable, though at first quite frangible. Streak black gray; sectile. Hardness about 2.5.

Before the blow-pipe on charcoal it fuses easily, giving a yellow incrustation surrounded by a white incrustation; with carbonate of soda a strong alliaceous odor, and a brilliant metallic globule when hot, which becomes dull and lustreless on cooling.

The crystals, as before mentioned, coated a thin layer of quartz, on which they were associated with small crystals of chalcopyrite. They were carefully freed from all extraneous matter, and the analyses gave the following results:

	I.	II.
Sulphur,.....	8.22 per cent.	8.14
Arsenic,.....	9.78 "	
Antimony,.....	6.54 "	
Lead,.....	68.51 "	67.40
Copper,.....	7.67 "	5.62
Silver,.....	trace.	

100.72

The less amounts of lead and copper in (II.) are to be accounted for by the crystals taken for analysis having small particles of the amorphous portion adhering.

	Per cent.	Quotient.	Ratio.
Sulphur,	8.22	0.514	10.3
Lead,.....	68.11	0.658	13.16
Copper,.....	7.67	0.242	4.8
Arsenic,.....	9.78	0.130	2.6
Antimony,.....	6.54	0.050	1.0

By taking 2 Cu = 1 Pb, we have the formula



Owing to the partial decomposition of the amorphous portion, extending generally through the specimen by the minute cracks and its minute quartz granules, no positive composition can be assigned to it.* The following are the results of a determination of the bases and a calculation of their ratio after the subtraction of the quartz:

Quartz,	25.73 per cent.		By calculation.
Lead,	51.32 "		69.11 per cent.
Copper,	2.31 "		3.11 "
Sulphur,	6.75 "		9.09 "
(Antimony and Arsenic) loss.....	13.89 "		18.69 "
	<hr/> 100.00		<hr/> 100.00
	Per centage.	Quotient.	Ratio.
Sulphur,	9.09	0.564	5
Arsenic and Antimony, ..	18.69	0.191	2
Copper,	3.11	0.098	1
Lead,	69.11	0.664	6.5
	<hr/> 100.00		

* The intimate mixture of quartz through the massive portion of the mineral gives it a lighter color.

Again calculating $2 \text{ Cu} = \text{Pb}$, we have the same formula as with the crystals.



I have seen but one specimen of this mineral, which was given me by Joseph A. Clay, Esq., having been sent to him from Peru by his brother Hon. J. Randolph Clay, United States Minister to that country. It was labelled—"Pabonado en Rocicler de Aranzazu." The appearance of the massive mineral is not unlike some of the gray coppers, though its color is more of a bluish gray. This peculiarity together with the bronze tarnish of its surface, with the blue spots of Covelline (?) and the excess of lead as shown by blow-pipe examination, induced me to make a quantitative analysis of both the massive mineral and the crystals. The entire specimen was small, and the proportion of the crystallized mineral being also small, I was obliged to make the examination with a very limited amount of material. The determination of the specific gravity must be deferred until more of the mineral is obtained.

I name this mineral in honor of the Messrs. Clay, whose interest and exertions in mineralogy are so well known to mineralogists in this country and abroad.

The protracted illness of Prof. J. D. Dana, and his subsequent departure for Europe, prevented his measurement of the microscopic crystals which I had sent to New Haven.

STROMEYERITE.

The specimen of this mineral which I obtained from the cabinet of Joseph A. Clay, Esq., was remarkable as resembling, in many of its characters, the mineral Sternbergite more than Stromeayerite. A blow-pipe examination, in which I found copper, together with the want of flexibility in the crystals, and their high lustre, led me to refer the mineral to Stromeayerite. To decide this doubtful point, I picked out with difficulty a little of the pure mineral for analysis.

The mineral is from Copiapó, Chili. It occurs in small six-sided aggregated crystals belonging to the trimetric system, not exceeding an eighth ($\frac{1}{8}$) of an inch in diameter, which are implanted on minute quartz crystals, forming rose-like or fan-like clusters, having the striæ of O distinctly marked, and with striæ on the edges. In its appearance (as before mentioned) it is more like Sternbergite, but differs by the absence of flexibility, and also possesses more lustre than any specimens of Sternbergite which I have seen.

Hardness from 2.5 to 3. Lustre metallic: color dark steel gray: streak nearly black and shining. Sectile, does not soil paper: crystals brittle.

The Stromeayerite occurs in small veins and fissures in barytes, the sides of which are lined with very small quartz crystals and associated with small crystals of Pyrargyrite.

Before the blow-pipe on charcoal fuses to a white globule, somewhat malleable, which, with the fluxes, gives the reaction of copper: with carbonate of soda gives the reaction of sulphur.

The following are the results of my analyses:

	I.	II.	III.
Sulphur.....	16.35 per cent.	16.49 per cent.	
Silver.....	69.59 "	"	66.39
Copper.....	11.12 "		
Iron.....	2.86 "		
	99.92		

The silver determination of (III.) was from some impure crystals containing a little Pyrargyrite.

	Per cent.	Quotient.	Ratio.
Sulphur.....	16.35	1.02	10.2
Silver.....	69.59	0.64	6.4
Copper.....	11.12	0.36	3.6
Iron.....	2.86	0.10	1.0

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By taking $2 \text{ Cu} = \text{Ag}$, we have the formula $(\text{Ag } \underline{\text{Cu}} \text{ Fe}) \text{ S}$ or $6 \text{ Ag S} + 2 \text{ Cu S} + \text{Fe S}$.

POLYBASITE.

I am indebted to Joseph A. Clay, Esq., also, for a duplicate specimen of an undetermined mineral, which he lately received from Peru, labelled "A compact silver ore from San Pedro Nolasio, Tres Puntos, near Copiapó." From a fragment of a crystal I made an approximative analysis, which proves the mineral to belong to this species, as I have with the quantity at my disposal (0.0814 grammes,) been able with care to determine the proportion of the sulphides of silver and copper, which prove by the excess of base, that the mineral is of the species so appropriately named Polybasite.

The specimen which I have, contains short tabular hexagonal crystals, the terminal planes of which show the triangular striæ. These crystals are imbedded in crystallized gypsum, and are more developed by keeping the specimen for a short time in cold water. Calcite in scalenohedrous crystals, minute portions of blende and pyrites were also associated in the specimen.

Hardness about 2. Lustre metallic: color between steel gray and iron black. Streak, iron black. Opaque sectile, brittle, soft. Fracture uneven.

The following are the results of my analyses:

	Per cent.	Quotient.	Ratio.
Sulphur.....	16.14	1.0	8
Silver.....	64.18	0.59	5
Copper.....	8.13	0.26	2
(Arsenic and Antimony) loss..	11.55	0.12	1
	100.00		

From which may be deduced the formula:— $5 \text{ Ag S} + \underline{\text{Cu S}} + (\text{As Sb}) \text{ S}_3$.

GLASCERITE (?)

In No. 1 of "Mineralogical Notes," published in the Proceedings of the Academy of Natural Sciences for August, 1858, I mention a mineral which I found among some specimens recently presented to the Academy, brought from the Chinch Islands of the Pacific Ocean; it was labelled "Ammonia." From its appearance I suspected it to be a sulphate. By a qualitative analysis the sulphate of ammonia was found to be combined with a sulphate of one of the fixed alkalies, which I then supposed to be principally soda. By a quantitative analysis I now find that the quantity of soda is a minimum, and that the principal alkali is potash. The salt is therefore really a double sulphate of potash and ammonia, and notwithstanding the probability of its being a distinct salt and a new mineral species, I will, for the present, refer it to Glascerite, with a mark of interrogation. There is mentioned in Gmelin's Handbook of Chemistry, (Cavendish edition, vol. iii. p. 71,) a sulphate of potash and ammonia, which from the description therein given, accords with this mineral, ("scaley, shining, bitter crystals, unacted upon by the air and leaving neutral sulphate of potash when ignited.") Not one analysis is given, neither is the proportion of potash and ammonia mentioned, but reference is made to an article on this substance (artificial double sulphate of potash and ammonia) by Link, *Chemische Annalen* von Dr. Lorenz Crell, 1796, i, 29, to which work it is not in my power to refer.

The glaserite (?) is in compact lumps or concretions about the size of hickory nuts; the color is yellowish white, with a crystalline structure; taste pungent and bitter opaque; permanent in the air. Hardness about 2. Reaction with litmus paper perfectly neutral. Before the blow-pipe on platinum foil, blackens and fuses with difficulty, leaving a white bead which is soluble in water and tastes a little saline and bitter. When heated in a platinum crucible it becomes first black and then burns perfectly snow-white, not fusing at a high heat,

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The following are results of my analyses :

I.		II.
Sulphuric acid.....	48.40 per cent.	48.30 per cent.
Ammonia.....	5.37 "	5.10 "
Potash.....	43.45 } "	46.49
Soda.....	1.68 }	
Organic matter.....	trace	trace
<hr/>		<hr/>
98.90		99.89
Per cent.		Oxygen ratio.
Sulphuric Acid.....	48.35	28.96
Ammonia.....	5.23	1.60
Potash and Soda.....	45.81	7.77
		} 9.37

From which may be deduced the general formula $(\text{KO}, \text{NH}_4 \text{ O}) \text{SO}_3$.

Description of new species of the Coleopterous family Histeridæ.

BY JOHN LE CONTE.

In the year 1845, when I published a Monograph of the American Histeroids in the Boston Journal of Natural History, my memoir contained seventy-nine species. There were probably at that time contained in European collections, about two-hundred and fifty species collected from all parts of the world. Since then, the Abbé de Marseul has published his great work, "Essai monographique sur la famille des Histerides," and furnished accurate descriptions of six hundred and twenty species, besides collecting from other writers one hundred and twenty-six more which he has not been able to see. Of these, forty-five species were brought by my son from California. I now add twenty-five species from our own country, from Central America, and from Cuba, with one from Africa, making the whole number at present known to be seven hundred and seventy-two.

To what sum this may hereafter be increased, it is impossible to say, a great part of California has not yet been explored, and the States of New Mexico and Texas have as yet yielded very few. It is remarkable that among the numerous collections made by different exploring parties, so few of this family of insects have been found. Perhaps they may have found it disagreeable to look for them in the peculiar situations where most of them inhabit.

I add a few words respecting the name Hister. This word is said to be derived from the Latin *Histrion*, or Etruscan *Histrion*, meaning a player, on account of some few of them having red marks on the elytra, or from their feigning death (as a vast number of insects do) when first caught, which derivation appears inappropriate. The Roman poet D. J. Juvenalis in his second satire, verse 41, mentions a filthy fellow of the name of Hister. Linnæus was fond of alluding to the classic writers of Rome, and finding these insects living in the most filthy conditions, very properly gave this name to animals found in the midst of excrements and putrefaction.

Hololepta princeps. Oblongus, niger, nitidus, capitis lateribus utrinque linea longitudinali impressis; mento concavo profunde emarginato; pronoto linea dorsali a basi ad medium, stria marginali antice profundiore; elytris striis duabus ad basin, interna minima, externa brevi, fossa lateralis postice attenuata; propygidio antice ad latera persparse grosse punctato, pygidio sat dense punctato; epipleuris rugosulis unistriatis; corpore subtus medio impunctato, tibiis anticis et intermediis quadri-dentatis, posticis tridentatis.

Tejon Pass, California; John Xantus, Esq.

Oblong, black, shining, sides of the head with a small longitudinal line impressed on each side; chin concave, deeply emarginate. Thorax with a

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dorsal line reaching from the base to the middle, marginal stria deeper on the fore part. Elytra parallel, with two striæ at the base near the shoulder, the internal one very small, the external one more apparent but short, lateral fossa profound, attenuated behind. Propygidium anteriorly at the sides very sparsely and coarsely punctate, pygidium tolerably densely punctate. Epipleuræ rugosulous, unistriate. Body beneath impunctate, the pleuræ very thickly and coarsely punctate. Prosternum rounded at the apex, with an anterior oblique margin on each side. Antic and intermediate tibiæ four-toothed, the posterior three-toothed. Length .67 : including the jaws .8.

By far the largest of the known species of this family. The *Oxysternus*, hitherto considered the largest Histeroid, is .5 in length.

Omalodes rotundatus. Rotundus, convexus, niger nitidus, fronte stria circulari integra medio paulo emarginata; pronoto lateribus impunctatis; elytris stria dorsali prima integra, secunda postice abbreviata, tertia medio interrupta, quarta utrinque abbreviata, suturali basali, parva, brevi.

Mexico.

Round, convex, black, very shining; front impressed with a circular entire stria, a little emarginated in the middle. Thorax stria entire, ambient, the sides impunctate. Elytra with the shoulders projecting, humeral stria scarcely apparent, subhumeral abbreviated in the middle, first dorsal subentire, second abbreviated behind, third interrupted in the middle, fourth abbreviated on both sides and placed opposite the interruption of the third, sutural small, short, basal. Epipleuræ, sternum and mesosternum impunctate, the first unistriate. Propygidium thinly, pygidium densely punctate. Antic tibiæ four-toothed. Length .35.

Phelister affinis. Ovalis, convexus, niger, nitidus fronte concava; pronoto punctulato, stria marginali integra; elytris lævissimis, striis punctatis, dorsalibus quatuor primis integris, quinta et suturali æqualibus, antice ante medium abbreviatis, subhumerali ante medium antice valde abbreviata; pygidio punctato.

Mexico.

Oval, convex, black, shining, frontal stria rounded. Thorax entirely punctulate, the marginal stria entire. Elytra very smooth, the striæ punctate, first four dorsal equal, entire, the fifth and sutural equal, abbreviated anteriorly before the middle, subhumeral anteriorly very much abbreviated. Epipleuræ impunctate, bistriate. Pygidium rather scatteringly punctured. Feet brownish antic tibiæ 5-toothed. Long .1.

Phelister marginellus. Ovalis marginatus, convexus, rufus, nitidus impunctatus, fronte concava; pronoto stria marginali integra, ambiente; elytris striis impunctatis, dorsalibus quatuor primis integris, æqualibus, quinta et suturali ante medium antice abbreviatis, subhumerali integra.

Maryland.

Oval widely margined, convex, rufous, shining, impunctate; front excavated. Margin of the thorax projecting and containing the marginal stria which is entire and ambient and leaves a narrow raised cushion on the fore part. Elytra with the first four dorsal striæ entire and equal, the fifth and sutural abbreviated anteriorly before the middle, all of them impunctate, subhumeral entire, placed on the margin. Pygidium punctate; antic tibiæ indistinctly five-toothed. Length .1.

Phelister Panamensis. Ovalis, convexus, piceus, nitidus, fronte leviter concava; pronoto ad latera punctulato, estriato; elytris striis dorsalibus quatuor primis integris, quinta et suturali abbreviatis, stria subhumerali antice abbreviata, pygidio dense punctato.

Panama.

Oval, convex, pitchy, shining, front lightly concave: thorax punctulate on the sides, without a stria, marginal stria entire. Elytra with the four first dorsal

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striae entire, equal, the fifth abbreviated anteriorly much behind the middle, the sutural before the middle; epipleurae and mesosternum impunctate, the former bistriate, pygidium densely punctate. Feet rufous, antic tibiae with six small teeth. Length .1.

Resembles the *Ph. vernus*; but differs in the less concave front, in the longer sutural stria, and in the punctate pygidium; the *Ph. vernus* has this part very finely puncticulate, it is likewise a little larger.

Hister hospitus. Subrotundus, convexus, niger, nitidus, stria frontali subsinuata; pronoto unistriato; elytris striis tribus dorsalibus primis integris, quarta et quinta obsoletis, suturali ante medium antice abbreviata, subhumerali nulla; propygidio utrinque ad latera impresso; tibiis anticis tridentatis.

Western States.

Roundish convex, black, shining, impunctate, frontal stria subsinuate, mandibles toothless. Thorax with one entire stria, the descending portion of which forms a right angle with the part in front. Elytra with the first three dorsal striae entire, equal, the fourth and fifth obsolete or only marked by an apical and basal point, sutural anteriorly abbreviated before the middle, subhumeral none; epipleurae punctate bistriate. Propygidium with an impression on each side and with the pygidium densely punctate, mesosternum very slightly emarginate. Antic tibiae tridentate, the anterior tooth large. Length .2.

Hister regularis. Ovalis, parum convexus, niger, nitidissimus, impunctatus, fronte stria subplana; pronoto striis duabus externa abbreviata, interna integra; elytris striis tribus dorsalibus primis integris, quarta et quinta medio antice abbreviatis, suturali ante medium antice abbreviata, subhumerali medio antice abbreviata, pygidio punctato; tibiis anticis tridentatis.

Africa.

Oval, a little convex, black, very shining, impunctate, frontal stria nearly plain, a little incurved in the middle, mandibles strong, two-toothed, deeply longitudinally excavated. Thorax bistriate, the external stria much abbreviated posteriorly before the middle, the interior entire, sinuate in the middle, the marginal very lightly marked. Elytra a little narrowed behind, with impunctured striae, the first three equal, entire, fourth and fifth abbreviated anteriorly in the middle, the sutural a little before the middle, subhumeral impunctate; pygidium punctate. Antic tibiae tridentate. Length .35.

Hister granadensis. Suboblongus, convexus, niger, nitidus, stria frontali sinuata; pronoto bistriato, striis subequalibus, subintegris; elytris striis quatuor dorsalibus primis integris, quinta, suturali et subhumerali antice abbreviatis; propygidio utrinque impressione profunda laterali et cum pygidio punctato; tibiis anticis quadridentatis.

Panama.

Rather oblong, convex, black, shining. Head punctate, slightly impressed, stria sinuate. Thorax very finely puncticulate, bistriate, striae subequal, subentire the outer one a little more abbreviated than the inner. Elytra smooth, the first four dorsal striae equal, entire, fifth very much abbreviated behind the middle, sutural abbreviated before, subhumeral in the middle; epipleurae bistriate; propygidium with a deep lateral impression on each side, and with the pygidium thickly punctured. Antic tibiae four-toothed, the anterior tooth bifid, the posterior minute. Length .26.

Resembles *H. cœnoscus*.

Hister defectus. Rotundus niger, nitidus, stria frontali rotundata; pronoto bistriato, stria inferiore integra exteriore ante medium postice abbreviata; elytris striis quatuor dorsalibus primis integris, quinta nulla vel punctum merum, suturali abbreviata, subhumerali nulla; tibiis anticis quadridentatis.

New York to Georgia.

Roundish, black, shining, impunctate except on the head, frontal stria

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rounded, mandibles one-toothed. Thorax bistriate, the inner stria entire, the outer posteriorly abbreviated before the middle. Elytra with the first four dorsal striae entire, equal, the fifth a mere point or altogether wanting, the sutural anteriorly abbreviated before the middle and posteriorly towards the apex, subhumeral none; epipleurae punctate, bistriate. Mesosternum punctate, entire; pygidium coarsely punctate. Antic tibiae four-toothed, the anterior tooth emarginate. Length .15.

Hister ambigena. Subrotundus, subconvexus, niger nitidus punctulatus, stria frontali antice plana; pronoto striis duabus inequalibus, exteriore postice valde abbreviata, interiore integra: elytris striis omnibus dorsalibus integris, quinta et suturali antice connexis, subhumeralibus duabus antice abbreviatis; tibiis anticis tridentatis.

Vermont.

Roundish, subconvex, black, shining, punctulate; frontal stria plane in front. Mandibles toothless. Thorax bistriate, the interior stria entire, the exterior posteriorly abbreviated before the middle. All the dorsal striae of the elytra with the sutural entire, equal, this last connected anteriorly with the fifth at the base, subhumeral two anteriorly abbreviated, the exterior one longer, epipleurae punctate unistriate pygidium punctate, mesosternum not emarginate. Antic tibiae tridentate; anterior tooth emarginate. Length .175.

Hister furtivus. Subrotundus, niger, nitidus, impunctatus; pronoto bistriato, stria exteriore postice abbreviata; elytris striis tribus exterioribus integris equalibus, quarta antice abbreviata, quinta basali, suturali utrinque abbreviata, humerali distincta, subhumerali vix ulla, epipleuris punctatis, tristriatis; prosterno antice truncato, utrinque dente parvo armato; tibiis anticis tridentatis.

Georgia.

Roundish, black, shining, impunctate, frontal stria entire rounded. Thorax bistriate, exterior stria posteriorly abbreviated below the middle. Elytra, first three dorsal striae entire, fourth anteriorly abbreviated in the middle, fifth basal, a mere point, or entirely wanting, sutural anteriorly abbreviated, humeral distinct, subhumeral scarcely any; epipleurae punctate, with three striae, the third one rudimentary; prosternum truncate at the apex with a small tooth on each side, propygidium and pygidium punctate, the first with an impression on each side. Antic tibiae three-toothed. Length .4.

Very much resembles the *H. depurator*, but this last has the prosternum rounded at the apex, bent down and margined, it likewise has the sutural stria sometimes entire, but oftener abbreviated on both sides.

Epierus mexicanus. Ellipticus, convexiusculus, niger nitidus, fronte convexa, impunctata; pronoto dense puncticulato, stria marginali integra; elytris impunctatis, striis omnibus integris punctatis, marginali integra leviter impressa; epipleuris punctatis, unistriatis.

Mexico.

Elliptic, rather convex, black, shining, head impunctate, front convex. Thorax densely puncticulate, marginal stria lightly impressed, entire. Elytra smooth, impunctate, all the striae entire, equal, punctate, the marginal or subhumeral entire, slightly impressed, epipleurae punctate, unistriate. Pygidium densely puncticulate. Feet black. Length .125.

Epierus ellipticus. Ellipticus, subdepressus, niger, nitidus, fronte convexa puncticulata, pronoto dense puncticulato, stria marginali integra; elytris impunctatis, striis omnibus integris punctatis, subhumerali sive marginali fortiter impressa, epipleuris punctatis unistriatis.

Southern States.

Elliptic, rather depressed, black, shining, front convex, puncticulate. Thorax densely puncticulate, marginal stria entire, tolerably strongly impressed. Elytra impunctate, all the striae punctate, entire, the marginal or subhumeral, 1859.]

entire, strongly impressed, epipleuræ punctate, unistriate. Pygidium densely punctulate. Feet dark rufous. Length .1.

Epierus devius. Ellipticus convexiusculus, niger, nitidus, impunctatus; fronte convexa; pronoto stria marginali integra; elytris striis dorsalibus impunctatis quinque integris, suturali basi valde ante medium abbreviata, marginali integra; epipleuris punctatis unistriatis.

Mexico.

Elliptic, rather convex, black, shining, impunctate. Front convex, not punctulate. Thorax marginal stria entire. Elytra the five dorsal striæ entire, equal, impunctate, the inner ones more lightly impressed, the sutural abbreviated at the base much beyond the middle, the marginal or subhumeral entire; epipleuræ punctate, unistriate. Pygidium densely punctulate, feet black. Length .13.

Carcinops geminatus. Subrotundus, convexiusculus, punctatus, niger, nitidus; pronoto stria marginali nulla, antice utrinque impresso; elytris striis punctatis, quatuor primis dorsalibus integris, æqualibus, quarta basi versus suturam arcuata; quinta et suturali antice abbreviatis, interstitiis sulcatis, subhumerali ante medium abbreviata, tibiis anticis tridentatis.

New York.

Roundish, rather convex, punctate, black, shining. Front convex. Thorax without any marginal stria. Elytra with the striæ deeply impressed, punctate, the four first equal, entire, the fourth curved at the base towards the sutural, the fifth abbreviated anteriorly before the middle, sutural nearly entire, the interstices of the elytra deeply sulcate, so that the striæ appear geminate, subhumeral abbreviated before the middle; epipleuræ punctate, bistriate; antic tibiæ tridentate. Length .13.

Carcinops parvulus. Ovalis, depressus, niger, nitidus, fronte punctulata plana, non striata, pronoto lævi lateribus punctulatis, stria marginali integra von ambiente, elytris striis quatuor primis dorsalibus integris, quinta et suturali antice abbreviatis, subhumerali nulla, epipleuris lævibus bistriatis; pygidio grosse punctato.

Cuba.

Oval depressed, black, shining, front punctulate, plane, without a stria. Thorax smooth, punctulate on the sides, marginal stria entire, not ambient. Scutellum very apparent. Elytra smooth, impunctate, striæ punctate, first four dorsal equal, entire, fifth abbreviated anteriorly before the middle, the sutural at the middle, subhumeral none: epipleuræ impunctate, bistriate; pygidium coarsely punctate. Feet black, antic tibiæ tridentate. Length .07.

Paromalus estriatus. Ovatus, depressus, niger, nitidus, supra totus punctulatus; fronte convexiuscula; pronoto stria marginali non ambiente; elytris estriatis.

Pennsylvania.

Ovate, depressed, black very shining, above punctulate, beneath impunctate. Front convex. Thorax straight at the base, marginal stria entire, not ambient. Elytra without any striæ, the subhumeral likewise wanting. Epipleuræ bistriate. Pygidium dædalous. Antic tibiæ four-toothed. Length .1.

Paromalus parallelus. Oblongus, depressus, niger, nitidus, dense punctulatus, fronte estriata, pronoto stria marginali integra; elytris stria exteriori basali postice abbreviata, striis aliisque tribus medianis utrinque valde abbreviatis, suturali medio antice abbreviata.

Cuba.

Oblong, depressed, black, shining, densely punctulate; front without a stria, a little convex. Thorax marginal stria entire. Scutellum not visible. Elytra with the sides parallel, with four dorsal striæ on each, the external one basal,

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posteriorly very much abbreviated before the middle, the three others in the middle of the elytra very much abbreviated before and behind, sutural anteriorly abbreviated in the middle, subhumeral or marginal none; epipleuræ bi-striate: feet dark brown, antic tibiæ with four teeth. Length .1.

Saprinus latubris. Ovalis, niger, nitidus, fronte puncticulata; pronoto lateribus et basi punctatis; elytris postice diagonaliter extrorsum punctatis, lateribus impunctatis; striis omnibus dorsalibus postice pone medium abbreviatis, prima et secunda longioribus inæqualibus, tertia et quarta brevioribus æqualibus, quarta cum suturali integra connexa, subhumerali minima; tibiis anticis crenatis.

Western States.

Oval, black, shining, front punctulate. Thorax punctate on the sides and base, marginal stria entire. Elytra diagonally and outwardly punctate behind, the sides smooth, dorsal striæ all abbreviated behind the middle, the first and second longer, unequal, the third and fourth shorter and equal, the fourth joined to the sutural, which is entire, subhumeral a mere point. Epipleuræ smooth. Pygidium punctata. Antic tibiæ crenate. Length .1.

Saprinus sterquilinus. Rotundus, niger nitidus, capite punctato, vertice impresso, stria frontali nulla, pronoto lateribus punctatis, disco punctulato; elytris postice punctatis, striis dorsalibus postice abbreviatis per paria sub-æqualibus, quarta versus suturam arcuata, suturali antice ante medium, postice vero paulo abbreviata, subhumerali utrinque abbreviata, tibiis anticis spinoso-denticulatis.

Cuba.

Round, black, shining, head punctulate, vertex impressed with a small fovea, stria none. Thorax punctulate on the sides and base punctate. Elytra diagonally, outwardly and downwardly punctate, except on the sides, dorsal striæ abbreviated behind, equal by pairs, the outer ones the longest, the outermost one deeply and broadly impressed, the fourth one curved before but not joined to the sutural, which is abbreviated anteriorly before the middle and likewise a short instance from the apex, subhumeral very much abbreviated both before and behind. Epipleuræ and mesosternum punctate. Antic tibiæ spinoso-denticulate. Length .13.

Saprinus discors. Ovalis convexus, niger, nitidissimus, fronte puncticulata, stria nulla; pronoto lateribus et basi punctatis, hoc anguste, illis latius; elytris postice punctatis, striis omnibus dorsalibus postice abbreviatis, prima pone medium, ceteris medio abbreviatis æqualibus, stria suturali postice abbreviata, subhumerali utrinque abbreviata; tibiis anticis pluri-dentatis.

Mexico.

Oval, convex, black, very shining. Head punctate, stria none. Thorax punctulate, widely punctured on the sides, and narrowly on the base, marginal stria entire. Elytra diagonally, outwardly and downwardly punctate, except on the sides, dorsal striæ profoundly punctate, the first abbreviated beyond the middle, the three others at the middle and equal, the fourth joined to the sutural, which is abbreviated behind, the subhumeral abbreviated on both sides. Prosternum finely punctured, mesosternum the upper part coarsely punctate, the lower punctulate. Epipleuræ impunctate. Length .15.

Saprinus scrupularis. Niger, nitidus, fronte puncticulata, stria nulla: pronoto punctulato, lateribus late punctatis; elytris punctatis, striis dorsalibus subæqualibus postice abbreviatis, quarta cum suturali antice connexa, tertia paulo longiore, subhumerali antice medio abbreviata; pygidio dense puncticulato, epipleuris mesosternoque grosse punctatis; tibiis anticis sex-dentatis.

Georgia.

Black or pitchy, shining, front convex, punctulate, stria none. Thorax punctulate, the sides widely punctate, marginal stria entire. Elytra entirely punctate.
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tate except on the sides, subhumeral stria anteriorly abbreviated in the middle, the dorsal striæ generally equal, the third sometimes a little longer than the others, all of them abbreviated behind the middle, the fourth anteriorly united with the sutural, which is entire. Epipleuræ and mesosternum coarsely punctate. Pygidium thickly punctulate. Legs dark brown. Antic tibiæ sexdentate. Length .09.

The smallest species of this genus.

Saprinus olidus. Niger nitidus, fronte puncticulata; pronoto lateribus et basi dense punctulato, stria marginali integra; elytris postice dimidio et lateribus dense aciculato-punctatis, area scutellari magna nitidissima, stria subhumerali antice abbreviata, striis dorsalibus subæqualibus quarta cum seturali antice connexa, suturali integra.

Texas.

Round, black, shining, front punctulate on the sides and base, marginal stria entire. Elytra densely aciculato-punctate behind for one-half their length and on their sides, subscutellar area large, very shining, subhumeral stria abbreviated before, dorsal striæ equal, abbreviated behind the middle, the fourth united to the sutural, which is entire. Pygidium densely punctate. Epipleuræ and mesosternum coarsely punctured. Legs dark brown, antic tibiæ many-toothed. Length .1.

Saprinus fulgidus. Rotundus, piceus nitidus, fronte simplici puncticulata; pronoto toto punctato; elytris punctatis, area subscutellari nitidissima, striis dorsalibus postice abbreviatis, secunda longiore tertia et quarta æqualibus, quarta cum suturali connexa; suturali integra, subhumerali antice ante medium abbreviata.

Cuba.

Round, pitchy, shining, submetallic, front simple, punctulate. Thorax entirely punctate, marginal stria entire. Elytra punctate with a smooth very shining, subscutellar area, upper part of the sides impunctate, dorsal striæ abbreviated behind, the second the longest, the third and fourth equal, the last joined to the sutural which is entire, subhumeral abbreviated anteriorly before the middle. Pygidium and mesosternum punctate. Legs brown. Antic tibiæ many-toothed. Length .1.

Heterius setiger. Rotundus, convexus, rufo-piceus, nitidus; pronoto marginato, parce granulato et setoso; elytris seriatim setosis, striis tribus externis elevatis, internis punctatis.

Found in Habersham Co., Georgia, in the nest of a small species of ant under the bark of a tree.

Round, convex, rufo-piceous, shining. Front concave, with three short diverging crests. Thorax twice as broad as it is long, narrowed anteriorly, the sides widely rounded with a prominent margin, the disk thinly granulated, each granule furnished with a short erect bristle. Elytra a little wider than the thorax, the sides widely rounded with six striæ on each, the internal ones not impressed, confusedly punctate, the external ones slightly elevated, punctate, all the punctures setigerous. Pygidium thinly and rudely granulate. Antic tibiæ dilated with a spinulous margin. Length .06.

Teretrius americanus. Cylindricus, elongatus, niger, estriatus, totus punctatus, capite magno fronte convexa; pronoto antice paulo declivi, lateribus subsinuatis leviter marginato; elytris parallelis, convexis, lateribus rotundatis.

Middle States.

Cylindrical, elongated, black, estriate, entirely punctate. Head large, front convex, antennæ rufous. Thorax oblong, longer than it is wide, convex, rounded and subsinuate on the sides, with a very slight margin, the marginal stria is only apparent on the anterior angles of the thorax and runs but a short distance

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on each side. Elytra rufous on the sides, parallel, convex, cut off square at the apex, densely and distinctly punctured, suture a little raised. Epipleuræ bistriate. Legs rufous. Antic tibiæ dilated, five-dentate. Length .1.

The European species, to which this is very nearly allied, has no margin to the thorax, but merely a marginal stria. Our species wants the small furrow at the exterior base of the margin of the thorax. The thorax is moreover more finely and sparsely and the elytra more coarsely punctate.

In my Monograph of these insects, the American was considered identical with the European species.

Contributions to American Lepidopterology.—No. 2.

BY BRACKENRIDGE CLEMENS, M. D.

TINEINA.

LITHOCOLLETIDÆ.

Imago with pointed or almost caudate anterior wings, with the costal nervure rather short and nearly coincident with the basal portion of the anterior margin; with the subcostal simple from the base to the apical third of the wing, where it delivers to the costa two or three very short marginal nervules (except in *Tischeria*;) with the discoidal cell usually acute behind, with one or two branches to the tip of the wing; with the median simple nearly to the tip, and dividing into two approximated nervules, with the submedian simple. The posterior wings linear-lanceolate, with a very short costal nervure at the base; with the subcostal nervure simple; with the median nervure simple and both rather faintly indicated.

TABLE OF GENERA.

Head with a tuft above.

Tuft abundant and hairy.

Antennæ simple.

Lithocolletis.—Anterior wings with *two* subcosto-marginal veins and *one* from the apex of the discoidal cell.

Tuft little exceeding the front, *scaly*.

Antennæ ciliated in the ♂.

Tischeria.—Anterior wings with *four* subcosto-marginal veins, the first from near the basal third; discoidal cell not pointed and *two distinct* discal nervules.

Tuft scanty, not overarching the vertex.

Leucanthiza.—Anterior wings with *three* subcosto-marginal veins; discoidal cell acute, with *two distinct* veins from the apex.

Head smooth.

Phyllocnistis.—Anterior wings with *three* subcosto-marginal veins; discoidal cell pointed with a single vein from the apex, furcate near the tip.

LITHOCOLLETIS Zeller.

Head roughened with an abundant tuft of hairs overarching the vertex. Front smooth, broad and retreating or much retreating. Ocelli none. Eyes scarcely visible and partially covered with scales. Antennæ simple, hardly shorter than the anterior wings, with the basal joint moderately thickened, but not expanded into an eye-cap. Maxillary palpi none. Labial palpi filiform and drooping, (in the living insect ascending.) Tongue naked, about as long as the anterior coxæ.

* This genus and the one preceding it, belong to the family Lyonetidæ in the system of European writers. The close relationship indicated in the structure of the perfect insects, and the general harmony of their histories, do not, however, in my own view, authorize the separation of the genera here described, into distinct families.

The anterior wings are pointed (from the outline of the cilia appearing to be elliptical,) the posterior lanceolate. In the anterior wings the discoidal cell is *acute behind*; the subcostal nervure sends two short branches to the costa, and from the apex of the discoidal cell a single vein to the tip. The median nervure sends two veins to the inner margin near the tip. In *Desmodiella* there is but *one* subcosto-marginal vein. In the posterior wings both the subcostal and median nervures are simple.

There are two larval forms in this genus. In the first, the head is much longer than broad, *acutely ellipsoidal*, with the sides rather thick and rounded; the body is cylindrical, submoniliform and the thoracic rings somewhat swollen. In the second, the head is thin and flattened, with the mandibles forming an appendage in front; the body flattened, deeply incised and mammillated on the sides. In both groups there are *three* pairs of thoracic feet, *three* of abdominal and a terminal pair, but shorter in the second than the first.

The larvæ mine the upper and under side of leaves, the larvæ of the first group usually throwing the leaf into a fold and feeding from the margins of the mine to the center; those of the second forming a flat mine, sometimes a rather broad linear tract and sometimes an irregular blotch, their mandibles being capable of working only in a horizontal direction. They change into pupa within the mine, some weaving a firm cocoon, some suspended in a web, and some forming a cocoon of grains of excrement and silk, or constructing the outline of the cocoon with them. The cocoons of the second group are shown on the separated epidermis as a circle and an almost hemispherical protuberance on the under surface.

The perfect insects rest with the antennæ thrown backward beneath the wings, some with the head slightly elevated, others with the head applied to the surface and the body behind elevated. I think the majority of the species here described assume the latter position, with variations in the angle formed with the surface on which they rest.

Table of Species.

I.—With an apical spot.

Without a basal streak.

Fore wings golden above the fold.

2. *Robiniella*, dark cinereous beneath the fold, sometimes rather silvery.
Fore wings pale reddish-saffron, with golden hue.

4. *Æriferella*, with the first dorsal streak black-margined internally and at tip behind.

Fore wings deep reddish-orange.

10. *Obstrictella*, with three silvery bands; apical spot with one or two silvery scales.

With a basal streak.

Fore wings silvery.

Basal streak black.

6. *Argentifimbriella*, with the streaks decidedly dark-margined; golden towards the tip.

Basal streak golden.

1. *Lucidicostella*, with the streaks not decidedly margined; suffused with golden.

Fore wings pale golden.

Silvery basal streak black-margined.

7. *Obscuricostella*, with inner margin at base of the general hue.

Silvery basal streak unmargined.

8. *Ostryæfoliella*, with inner margin at base with a white streak.

II.—With an apical spot.

‡ Apex concolorous and not dusted.

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With a basal streak.

Fore wings shining ochreous-saffron.

5. *Basistrigella*, with first costal and dorsal streaks unmarginated.

With no basal streak.

Fore wings ferruginous brown.

3. *Desmodiella*, ruby tinted at base, with two silvery bands.

Fore wings silvery.

9. *Lucetiella*, golden toward tip, with a black costal spot and opposite black line.

?? *An oblique costo-apical white streak or spot.*

Apex not dusted with dark scales.

Fore wings reddish-orange.

12. *Aceriella*, with a short dorsal streak near the base, two silvery bands, an oblique dorsal streak near the tip, and a costal spot above it.

Apex dusted with dark scales.

12. Var. *Aceriella*?

??? *With dispersed, dark, apical scales.*

Fore wings reddish-orange.

With three silvery bands.

11. *Caryæfoliella*, black margin of the second band produced, apical scales on a white ground.

With two silvery bands.

13. *Guttifinitella*, black margin of second band not produced; a costal and dorsal spot near the tip,

Fore wings white.

15. *Hamadryadella*, branded with shining ochreous-saffron; irrorated with black.

With a basal streak.

5. *Basistrigella*, (sometimes,) with four costal and three dorsal slender streaks.

16. *Argentinotella*, with five costal and four dorsal conspicuous streaks.

???? *With a median, black, apical streak.*

Fore wings dark brownish-golden.

14. *Cratægella*, with a silvery basal streak, black-margined above.

1. *L. lucidicostella*.—Antennæ white. Head and tuft silvery-white. Fore wings, basal portion silvery white to the middle, *with a discal pale golden streak* from the base, retreating from the costa before reaching the middle of the wing, and somewhat suffused with golden beneath the fold. From the middle to the tip, pale golden, with four costal silvery streaks, dark-margined internally, and two dorsal silvery streaks, the first opposite the second costal streak, and both dark-margined internally; *the first costal streak not decidedly dark-margined*. Apical spot, black. Hinder marginal line in the cilia, dark brown; cilia pale gray. Hind wings shining bluish gray; cilia gray.

The larva mines the under side of the maple leaf, *Acer saccharinum*, in July, Sept., and Oct. The head is pale brown; body pale green, colored darker by the ingesta. "Frass" collected into a ball within the mine. The pupa is suspended in a web of silk within the mine.

2. *L. Robiniella*.—Antennæ dark brown. Front silvery white, tuft dark brown mixed with grayish. Thorax dark brown. Fore wings golden yellow above the fold, and dark cinereous somewhat dusted with blackish beneath it. About the middle of the wing is an oblique, silvery costal streak, black-margined on both sides, extending to the fold; another beyond the middle, meeting nearly in the center of the wing at an angle, a dorsal streak from the inner margin, the former black-margined on both sides, the latter internally; another costal streak near the tip with an internal circular black margin, opposite to 1859.]

a dorsal streak of the same hue and joined or nearly joined to it. Just behind the apical spot is a straight silvery streak, black-margined internally. Between the first and second dorsal streaks, is a short black streak in the fold. Apical spot, black and round, with a hinder marginal blackish line in the cilia; cilia grayish. Hind wings, shining dark gray, cilia the same.

The larva mines the underside of the locust leaf (*Robinia pseudo-acacia*) the separated epidermis of which is conspicuously white. It may be found in the latter part of September and the beginning of October. The pupa is contained in a white silken cocoon within the mine. The imago appears in the latter part of October, and early in November. I have not found a spring or summer brood in the leaf of the locust. The larva is cylindrical; the head pale brown; the body pale greenish white, with a red vascular line from the 5th to the 9th segment; on the 9th segment are two irregular patches, chrome yellow; sometimes these patches are wanting.

The under side of the leaf of *Amphicarpæa monoica* is also mined by a larva, which I believe is the same as that in the leaf of the locust. It may be found in the beginning of September, the imago in October. The imago differs very slightly from *Robiniella*, and I have no note of any difference in the larval state, and like *Robiniella* it weaves a white silken cocoon within its mine. The perfect insect differs from the foregoing species in the following respects: the wing beneath the fold is blackish at the base, with a silvery dorsal spot rather nearer the base than the first costal spot and exterior to the dark-margin, it is silvery, dusted with blackish; the second costal spot is not as distinctly angled in the middle and the apical spot is larger; in some specimens there are two dorsal white lines on the thorax. The general resemblance between the two is so marked that I consider it unnecessary to designate it as a variety, for it is undoubtedly, I think, the same insect.

With a single subcosto-marginal nervule.

3. *L. Desmodiella*.—Antennæ dark brown, tipped with a silvery hue. Front whitish, with a ruby-colored lustre; frontal tuft dark brown. Thorax with a splendid ruby hue. Fore wings ferruginous brown, ruby-tinted at the base, with two silvery bands dark-margined on both sides, one near the base and one in the middle of the wing. A costal and dorsal silvery spot near the tip, opposite to each other, and a costal silvery spot just before the tip, the two former dark-margined on both sides, and the latter slightly dark-margined. No hinder marginal line; the cilia opposite the last dorsal spot blackish, and the wing beneath the last costal spot golden-brown. Hind wings pale brownish gray, cilia the same.

The larva may be found in the leaf of *Desmodium viridiflorum* in July and early in August; it mines the under surface, usually near the margin, which is more or less folded, and the separated epidermis brown and hairy. I have no description of the larva. It becomes a pupa during the latter part of August, and is suspended within the mine in a very slight web of silk. The perfect insect is the smallest of this group that has come under my observation.

4. *L. Æriferella*.—Antennæ dark brown above, white beneath. Front silvery white; tuft dark brown. Fore wings pale reddish-saffron with a golden hue, especially from the middle to the base, with four silvery costal streaks, the first on the middle of the costa, and all except the last black-margined toward the base, the third but faintly, and the costa black from the base to the first costal streak. Three silvery dorsal streaks on the inner margin, the first two large and the third small, the first black-margined internally and around the tip behind, the second by a line curved above. Apical spot small and black, with the scales behind it having a bluish splendid lustre; hinder marginal line blackish; cilia dark grayish, with a fulvous hue. Hind wings dark gray, cilia fulvous.

The larva may be found in the leaves of oaks in September and early in Octo-

[Nov.

ber. It makes a small mine on the under surface, and the leaf is thrown into a fold previously to pupation and the cuticles folded and corrugated. The pupa is contained in an ovoid cocoon within the mine, composed of "frass" and silk. The imago appears in May. The body of the larva is cylindrical. The head is pale brown; the body yellow, with a broad, vascular, reddish brown band. There is doubtless a spring brood, but I have not searched for the larva during the season.

5. *L. basistrigella*.—Antennæ silvery. Front silvery, tuft fulvous mixed with silvery. Thorax pale, reddish golden, with a white streak on each side and one in the middle. Fore wings shining ochreous saffron, with a slender, unmarginated white basal streak in the fold, a white basal streak along the costa, narrowly dark margined on the extreme costa, extended to the first costal streak, which is silvery white, very oblique and unmarginated; behind this are three small costal streaks of the same hue, the two central dark-margined internally. Opposite the first costal streak is a long, very oblique, silvery white dorsal streak, extended along the inner margin to the base, with dark brown scales between their hinder ends, or exterior to the tip of the dorsal streak, but sometimes absent. Nearly opposite the third costal streak is a dorsal silvery streak dark-margined internally. No apical spot, sometimes with dispersed dark brown scales beneath the last costal spot. The hinder marginal line blackish; cilia pale fulvous. Posterior wings gray, cilia gray with a fulvous hue.

The larva mines the under side of the leaves of oaks; I have usually found it in the leaf of the chestnut oak, in September. The mine is limited by two veins of the leaf, and when completed the external epidermis is left transparent. The "frass" is cast on the margins of the mine, and when the larva is prepared to enter the pupa state it collects the grains of "frass" and makes an oval outline of them within the mine, or wall to its cocoon, leaving the cuticles transparent, so that the pupa can be seen within. The imago appears early in May. The body of the larva is cylindrical. It is lemon-yellow along the dorsum, except the three anterior wings, which are whitish, with a series of dark brownish dorsal dashes beginning on the third ring; on the eighth ring, in some specimens, is a dorsal reddish orange patch. Head whitish, tinged with pale brown.

6. *L. argentifimbriella*.—Antennæ silvery, annulated with darkish brown. Head, front and thorax silvery white. Anterior wings silvery, pale golden from nearly the middle to the tip, with a long basal dark brown streak margined above with golden, extending nearly to the first costal streak. There are four silvery costal streaks all dark-margined, the first very oblique, the second convex toward the base of the wing. The first costal dark margin is decided and extended on the costa toward the base. Two silvery dark-margined dorsal streaks, the first opposite the second costal streak. The apical spot black; hinder-marginal line dark brown, cilia silver gray. Hind wings silver gray, cilia the same.

Found in the pupa state in the same leaf as the foregoing in the latter part of September. The pupa is suspended within the mine in a very thin silken web. The perfect insect appears early in May.

7. *L. obscuricostella*.—Head and frontal tuft silvery. Thorax very pale golden. Fore wings pale golden, with a silvery median stripe from the base, *black-margined toward the costa*, extending to the middle of the wing; with four silvery costal streaks, the first very oblique and rather long, and all except the last black-margined internally, the margin of the first being long and the continuation of a black streak from the base along the extreme costa. Three silvery dorsal streaks, the first quite long, obliquely curved and opposite the first costal streak, and the first two black-margined internally; *the second dorsal obliquely opposite the third costal streak*. Apical spot black; hinder-marginal line black, cilia grayish. Hind wings bluish gray, cilia the same. *Abdomen black, tipped freely with yellow.*

1859.]

The larva mines the leaf of *Ostrya Virginica* (hop-hornbeam) in September. I have no description of the larva, supposing at the time of capture it was the same as the succeeding species. The pupa was not contained in an ovoid cocoon made of "frass" and silk. The imago appears in May.

8. *L. Ostryæfoliella*.—Antennæ silvery. Front silvery, tuft fuscous and silvery mixed. Thorax silvery, with the basal part of tegulæ pale golden. Fore wings pale golden, with an *unmargined, median, silvery basal stripe, and a silvery streak along the basal portion of the inner margin*. Fore wings pale golden, with four silvery costal streaks, all except the last black-margined internally; with two dorsal streaks of the same hue, black-margined internally. The first costal and first dorsal streaks opposite, quite oblique and broad at their bases, the second dorsal opposite the second costal streak. The basal streak is moderately broad, and extends quite to the middle of the wing. Apical spot black; hinder-marginal line blackish; cilia fulvous gray. Hind wings gray, cilia fulvous gray. *Abdomen pale fulvous*.

The larva mines the under side of the leaves of *Ostrya*, and may be found early in July and October. The mine is usually near the margin of the leaf, is flat at first, but is gradually thrown into a fold, the separated epidermis corrugated. When completed, the epidermis has changed to a pale brown color. The larva undergoes its transformation in a cocoon composed of "frass" and silk, in the form of a small ovoid ball suspended within the mine. The larva is cylindrical, with the body pale yellow, colored on the dorsum beyond the third segment, dark green from ingesta. The imago appears in August and May.

In the same leaf, mining the upper surface in a blotch mine, at first white and subsequently brown, may be found in October a *Lithocolletis* larva of a different type from the above. It tapers posteriorly, is flattened above and beneath, with the rings distinctly separated and mammillated at the sides; the first ring is rather abrupt anteriorly and much broader than the head. The head is somewhat triangular, flattened and thin, with the mandibles projecting in front as two small, rounded appendages. The head is pale brown, the body of the same hue, with dorsal, dark brown, elliptical maculæ, placed transversely on the segments. I have not seen the imago, and refrain from naming the species, lest it may be identical with some one hereafter described. The cocoon is *circular*, its outline being visible on the upper epidermis as a circle, while beneath it is raised and prominent.

9. *L. lucetiella*.—Antennæ silvery. Head, tuft and thorax silvery. Anterior wings silvery from the base to the middle, and thence to the tip golden, with a golden costal streak from the base not extended to the middle. About the middle of the wing is a silvery band, broadly margined internally with golden, and with a *minute black point* on the costa internally; a costal silvery spot, margined internally by a *black spot*, nearly opposite to which is a large dorsal silvery streak margined internally by an *oblique black line*; near the tip is a costal, silvery, unmargined streak curving to the tip; cilia golden, at the tip and on inner margin silvery. No apical spot nor hinder-marginal line. Hind wings silver gray, cilia the same. *Abdomen blackish, tipped with silvery gray*.

The larva mines the under side of the leaf of *Tilia Americana* (bass wood) in July, September and October. The mine is most frequently nearly square in form, and when completed both cuticles of the leaf are left nearly transparent, and the leaf is not folded. The "frass" is cast on the edges of the mine. It weaves an oval cocoon, thin enough, however, to permit the pupa to be seen through the cuticles. The larva is cylindrical. The head pale brown; the body pale greenish white, with a series of dorsal brown spots from the third ring posteriorly. The imago appears in August and May.

10. *L. obstrictella*.—Antennæ silvery beneath, blackish above, with
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a whitish band near the tip. Front silvery, with a reddish tinge on the forehead. Tuft and thorax reddish orange. Fore wings deep reddish orange, with three silvery bands black-margined exteriorly, one beyond the middle toward the base, one about the middle and one near the tip. A large black apical spot, with a few silvery scales or minute spots; hinder-marginal line dark brown, cilia reddish orange. Hind wings blackish, cilia blackish brown. Abdomen black.

The larva mines the under surface of oak leaves, in September. I did not open the mines of the specimens I secured as I had but two. The larva was cylindrical, and through the unruptured cuticle appeared to be of a lemon yellow color. The pupa was contained in a very slight web within the mine. The imago appeared in May. The larvæ which I secured were taken in the leaves of the *black oak* on September 23d.

11. *L. Caryæfoliella*.—Antennæ silvery, annulated with blackish. Front silvery. Tuft and thorax reddish orange. Fore wings reddish orange, with three silvery bands, black-margined exteriorly, the second about the middle of the wing, angulated, with the black margin broad and produced posteriorly on a whitish ground, nearly to the third, which is somewhat interrupted in the middle; the first midway between the second and base of the wing and also angulated near the costa. The apical portion of the wing white, covered with dispersed black scales, with a few black scales on a whitish ground, on the costa, between the last silvery band the dusted apical portion; with two hinder-marginal lines, one the margin of the apical scales, the other a dark brownish line in the cilia. Hind wings pale brownish gray, cilia gray, with a fulvous hue.

The larva mines the upper side of the leaves of the hickory tree in June, July and September, making a white blotch, or an irregular, rather broad tract when there is but one in the leaf; and not throwing the leaf into a fold. Frequently there are several larvæ in a leaf, in one instance I counted twelve. The "frass" is deposited along the middle of the mine. The larva is flattened, and its physical characteristics are similar to those of the second larval group. The head is very light brown; the body dark lead color, becoming yellowish posteriorly, with the mammillæ of the thoracic rings yellowish, and a central spot of the same hue on the first; each ring on the dorsum with a dark brown, shining macula, those on thoracic rings trapezoidal, the remainder oval; on the ventral surface the maculæ are also dark brown, those on the fourth and fifth rings being oval. The perfect insects of the spring brood appear in August; from the fall brood I did not succeed in rearing the imago.

12. *L. acerella*.—Front silvery, tuft reddish orange and silvery mixed. Thorax reddish orange. Fore wings reddish orange, somewhat metallic, with a white streak black-margined exteriorly, from the inner basal angle to the fold; with two oblique, silvery bands black-margined behind, one about the middle of the wing and the other midway between it and the base of the wing. Near the tip is a costal silvery spot, black-margined behind, with an opposite, oblique, dorsal streak of the same hue, likewise black-margined behind, and an oblique, costal, silvery streak continued on the line of the last dorsal, running into the cilia just before the tip, black-margined above, at the tip before, and below at the tip behind; scarcely with a hinder-marginal line, cilia of the general hue. Hind wings plumbeous, cilia with a fulvous hue.

The larva mines the leaf of maple in September. It mines the upper surface of the leaf, making a flat, rather broad tract, casting its "frass" along the middle of the course of it. Physical characteristics those of the second larval group. Head pale brown; body yellowish green, with oval, dorsal, brown maculæ, darkest on their margins; thoracic rings on their sides pale yellowish. The cocoon is circular. The larva is likewise found in the leaf of *Hamamelis Virginica* (witch-hazel).

I have two or three other specimens which appear to unite the specific characters of the present and succeeding species, and I therefore decline to describe them until I have conducted more careful observations on their embryonic histories than I have instituted at present.

13. *L. guttifinitella*.—Front silvery, with a reddish hue. Tuft and thorax reddish orange. Antennæ blackish brown. Fore wings rather deep reddish orange, with two silvery bands black-margined behind, one in the middle of the wing and nearly straight, the other midway between this and the base of the wing and obliquely placed. Before the costo-apical cilia is a costal, silvery spot, black-margined on both sides, with an opposite dorsal spot, black-margined behind. The apical portion of the wing is dusted with blackish, dispersed scales with a white spot near the tip above the middle of the wing. There are two hinder-marginal lines, one the margin of the dispersed scales, the other dark brownish in the cilia.

The larva may be taken in August and September in the leaf of *Rhus toxicodendron* (Poison Oak) mining the upper surface in a rather broad, tortuous tract, and there are ordinarily several in the same leaf. The larva belongs to the second larval group. The head is a fine pale brown; the body yellowish posteriorly, becoming brownish above, with dorsal and ventral dark brown maculæ. The cocoon is circular, formed within the mine as usual in this group in a little circular depression.

It is probably unnecessary to caution the collector to be careful in handling the leaves of the food-plant of this larva; to many persons they are poisonous, producing a very disagreeable and uncomfortable eruption. I was affected by it when I first collected this species, and would advise all others to handle the food-plant "with gloves."

14. *L. cratægella*.—Antennæ, front and tuft dark silvery gray. Fore wings rather deep brownish golden, with a broad silvery basal streak, black-margined toward the costa, extended to the tegulæ in front and pointed behind, with the point black-margined on both sides and with the costa black. Four costal silvery streaks, the first oblique but rounded beneath and black-margined on both sides, the others toward the base alone. Three silvery dorsal streaks, the first rather broad, oblique, nearly touching the first costal, and black-margined on both sides as also the second; the third only toward the base. A streak of black scales in the middle of the wing at the apex, extended backwards between the streaks to the second dorsal and costal. Hinder-marginal line blackish, with a violet metallic hue; cilia dark fulvous.

The larva mines the underside of black thorn during September and October. The mine is usually limited by two veins of the leaf. The larva is cylindrical, with a very pale brown head; the body yellowish, colored dark green by the ingesta. The imago appears in April and May.

15. *L. hamadryadella*.—Front, tuft and thorax white. Antennæ white, annulated above with blackish. Fore wings white, with an angulated, shining, ochreous saffron band, rather behind the basal third of the wing, black-margined internally with dispersed scales; a broad angulated band of the same hue, behind the middle, black-margined internally with dispersed black scales, produced in the middle, so as to divide it into two portions, with the space between the bands somewhat suffused behind the second with ochreous saffron, and an irregular line of blackish dispersed scales through the middle of it. Near the tip is a costal and dorsal ochreous saffron spot, with the white space between these and the second band dusted with blackish, with the apical portion white, dusted with black scales, and connected with the patch before it by a line separating the costal and dorsal spots. The basal portion of the wing somewhat dusted with black, with a small blackish patch on costa near the base and two small, faint saffron patches beyond it. The hinder-marginal line blackish, cilia with a fulvous hue. Hind wings rather dark silvery gray, cilia with a fulvous hue.

[Nov.

Variation F.

The first ochreous saffron band interrupted in the middle, with a broad internal margin of scattered scales, produced behind in the middle; the second somewhat diffuse, with the irrorated portion of the wing spreading out behind from the produced part of its black-margin.

Variation G.

With an angulated line of blackish scales before the first band and an ochreous saffron patch between its angle and that of the black-margin of the first band.

The larva mines the upper side of the leaves of oaks in July. The head is black, the body pale yellowish, with an ochre yellow patch on the dorsum of the eighth segment, a dark vascular line and a few dark subdorsal spots posteriorly. The imago appears early in August. The variations F and G were specimens found in the pupa state.

16. *L. argentinetella*.—Antennæ silvery. Front and tuft silvery. Thorax pale reddish saffron, with a rather short, unmargined, silvery basal streak, with *five* costal silvery streaks and *four* dorsal streaks of the same hue. The first costal and dorsal streaks unmargined, the first dorsal being near the inner angle of the base, tapering to a point in the middle of the wing from a very broad base; the first costal streak rather slender and only one-half as long as the first dorsal; the second costal and second dorsal connected about the middle of the wing, and dark-margined toward the base by a line much curved in the middle; the third costal and third dorsal opposite, and each dark-margined internally; the fourth dorsal about midway between the fourth and fifth costal streaks; sometimes the fourth costal and dorsal streaks with a few dark internal scales, sometimes unmargined. At the apex is a small patch of scattered black scales; the hinder-marginal line rather indistinct, cilia saffron, paler on inner margin. Hind wings shining silver gray, cilia rather darker.

I am unable to give any account of this species. The specimens were unmarked by any number referring to my notes, and I suppose I must have mistaken it for some other, as I did not observe its peculiar markings until I came to write the present paper. I hope, however, to supply its larval history next season, now that the species thus far met with are tabulated in a manner which will facilitate recognition.

The following genus belongs, in the arrangement of European systematists, to the family Elachistidæ. I do not think any argument necessary to prove that it is a natural portion of Lithocolletidæ, which is usually regarded as being composed of a single genus.

TISCHERIA Zeller.

Head with a rather erect frontal tuft of scales; the front smooth, narrow and but little inclined. Ocelli none. Eyes rather salient, *naked* and not covered with scales in front. Antennæ scarcely more than one-half so long as the anterior wing, with *rather long pilose ciliations* beneath in the ♂, simple in the ♀, with the basal joint tufted in front. Maxillary palpi *very short and scarcely perceptible*. Labial palpi short, filiform and drooping. Tongue scaled, as long as the anterior coxæ.

The wings with long cilia; the anterior pointed almost caudate, the posterior lanceolate. The discoidal cell of the anterior not pointed, closed in front by a *very faint nervure*, and with a *faintly indicated secondary cell*, beyond which the subcostal nervure is almost obsolete. The subcostal nervure sends *four veins* to the costa, the first of which is rather long and arises near the basal third of the wing; the discal emits a simple vein to the costa above the tip and one to the inner margin beneath. The median nervure sends two veins to the inner margin near the tip. The submedian is simple.

1859.]

The head of the larva is circular in outline, thin, flat and nearly as broad as the first ring. The body tapers much posteriorly, is subcylindrical and moniliform, with the anterior rings slightly dilated, with the segments rounded and distinct at the sides; with three thoracic feet, four abdominal and one terminal pair, all of which are extremely short and are scarcely more than cup-like depressions.

The mine is usually made, if not always, near the margin of the leaf which, in this case is folded and curled so as almost to conceal the separated epidermis when completed, although in the beginning it is nearly flat. It contains no "frass," and an examination of the under surface reveals the presence of minute, round holes, through which the larva ejects its excrement. The pupa is contained within the mine, generally not in a cocoon, but the mine is carpeted throughout with silk, thus closing up the holes in the lower surface. The pupa case is thrust from the mine at maturity.

The imago reposes with its head elevated and the tips of the wings touching the surface on which it rests. The antennæ are thrown back beneath the wings, the anterior legs folded on the breast, the insect sustaining itself by means of the middle and posterior legs.

Table of Species.

Fore wings with isolated black atoms.

Solidagonifoliella; yellowish, slightly tinted with fuscous.

Fore wings immaculate.

Hind wings concolorous.

Zelleriella, yellowish, with reddish saffron at the tip.

Female? the entire insect reddish ferruginous.

Hind wings with a fuscous patch near the base.

Citrinipennella, bright yellow, reddish ferruginous at tip.

T. solidagonifoliella.—Head, thorax and antennæ pale yellowish. Fore wings yellowish, somewhat tinted with fuscous, with a short line of black atoms along the middle of the inner margin, two small patches or much scattered, isolated black atoms toward the base of the wing, a patch near the tip on the inner margin, with a minute patch or a few isolated atoms on the costa between the line and patch on inner margin; at the tip are a few isolated atoms. Hind wings very pale yellowish, cilia the same. The male described.

Found in the pupa state August 1st in the leaf of a species of *Solidago*. The mine was on the upper surface and the leaf not folded. The pupa was contained in a *slight circular cocoon*, attached to the upper cuticle, which formed its upper walls. On August 9th the imago appeared, the pupa case having been thrust through the *under side* of the leaf.

T. Zelleriella.—Antennæ, head and thorax pale yellow. Fore wings yellowish, with reddish saffron along the middle and toward the tip; cilia reddish saffron, pale yellow on the inner margin. Hind wings bluish gray, *tinted with yellow externally toward the tip*, cilia yellow on the exterior margin toward the tip, internally pale yellowish gray.

Female? The head, thorax and fore wings yellowish, suffused with reddish ferruginous, darkest toward the tip. Hind wings dark gray.

The larva mines the leaves of oaks in September, making at first a white blotch on the upper surface, but subsequently the upper epidermis becomes brown and the margin of the leaf curled. The head is dark brown; the body yellowish, with the dorsum of the first segment blackish, with two lateral minute pale spots; a vascular dark green line. The imago appears early in May, and there is, therefore, a spring brood.

T. citrinipennella.—Antennæ pale fuscous; head and thorax yellowish, tinted with reddish saffron. Fore wings bright yellow from the base

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nearly to the tip; apical portion reddish ferruginous. Hind wings dark gray, with a fuscous patch near the base; cilia pale fuscous. The male described.

There is but little difference between this and the foregoing species, either in the perfect or larval state. The larva mines the upper surface of oak leaves, in September. The head is dark brown; the body yellowish green, with a double dark brown macula on the dorsum of the first ring; vascular line very narrow and dark green. A more careful observation than I have given these insects may prove them to be the same, or the latter a variation. I have but a few of each of them. The imago appears early in May, and a spring brood will be found in early summer.

PHYLLOCNISTIS Zeller.

Head smooth, elongated above and clothed with imbricated scales. Front with scales closely appressed, slightly retreating and broad at the clypeus. Forehead or vertex, globosely rounded. Ocelli none. Eyes scarcely visible in front and partially covered with scales. Antennæ simple, *one-third* less long than the anterior wings; basal joint scarcely with an eye-cap, somewhat enlarged and flattened, but smooth and squamose. Maxillary palpi none. Labial palpi very slender, and drooping (in the living insect they are ascending). Tongue very slender, *naked* and scarcely as long as the anterior coxæ.

The anterior wings almost caudate, the posterior lanceolate. In the anterior wings the discoidal cell is *acute behind*; the subcostal nervure sends three short branches to the costa, and from the apex of the discoidal cell arises a branch *furcate* behind the tip, one of the nervulets proceeding to the costa before the tip, the other to the inner margin. The median nervure sends two approximated veins to the inner margin near the tip. In the posterior wings the subdorsal is simple, ending in the tip, the median furcate near its marginal extremity.

The head of the larva is thin, flat and circular, with the mandibles forming an appendage in front on the median line similar to some of the lithocolletes larvæ. The body tapers somewhat posteriorly with the sides of the segments slightly projecting and flattened, with the general form rather cylindrical. It is without feet or prolegs, and is very inactive, making little or no voluntary movement when removed from the mine, and does not retreat in its mine when touched. The body is somewhat viscid.

The mine is a linear tract just wide enough to accommodate the body, long and winding. The larva does not consume all the parenchyma of the leaf along its tract, but simply separates the upper epidermis, so that it is not transparent. When full grown the end of the mine is enlarged and the cocoon woven in a little pucker of the leaf within the mine.

The perfect insect is very sluggish, at rest carrying its antennæ thrown backward, but arched somewhat above the dorsal surface.

P. vitegenella.—Antennæ brownish silvery, fuscous at the tip. Head and thorax silvery white. Fore wings silvery white, slightly golden toward the tip, with a blackish dorsal patch on the inner margin near the base. Somewhat behind the middle of the wing is a black oblique costal streak and a black line curving from the costa to the inner margin. At the tip is a circular black spot, and before it on the costa two short, straight, black streaks. At the extreme tip of the wing are two blackish, diverging streaks in the cilia, with one of the same hue in the cilia beneath the apical spot nearly joining a black hinder-marginal line; cilia silvery. Hind wings silvery, cilia the same.

The larva mines the upper side of the leaf of *Vitis cordifolia* and perhaps other species, in September and October. The imago appears in September.

LEUCANTHIZA.

Head slightly hairy above on the vertex. The front smooth, covered with closely appressed scales, broad, even beneath and somewhat inclined. The 1859.]

forehead or vertex rather acutely rounded above or ridge-like. Ocelli none. The eyes scarcely visible in front, partially concealed by scales. Antennæ simple, nearly or quite as long as the anterior wings, the basal joint squamose and but little larger than the stalk. Maxillary palpi none. Labial palpi very slender and drooping. Tongue naked, as long as anterior coxæ.

The fore wings are almost caudate at the tip; the posterior lanceolate. The discoidal cell of the fore wings is *acute behind*, with *two veins* emitted at its point, one to the costa before the tip the other to the inner margin. The subcostal nervure sends three short veins to the costa and the median two approximated veins to the inner margin. In the hind wings the subcostal and median are both simple, and the *latter* extended to the tip.

The head of the larva is very thin and flat, with projecting mandibles in front. The body is much flattened, tapering anteriorly and posteriorly, the rings separated by rather deep incisions and their ends on the sides mammillated, the rings themselves being rather elongated ellipsoids. The thoracic feet are *three* and mere mammillæ; the abdominal three, but their appearance not very distinct, and a terminal pair. The larva approaches that of the second group of *Lithocolletis* very closely.

The mine is a conspicuous white blotch on the upper surface, generally occupying the greater portion of the leaf, and sometimes when two are present in the same leaf, the whole of it. A day or two previously to undergoing their last molting, the larva ceases to eat, and at the end of that time leaving its "cast" within the mine abandons it to construct a white silken cocoon, which is woven on some substance on the surface of the ground.

The perfect insect holds the antennæ extended at the sides when at rest, and moves them with a rotatory motion during progression.

L. amphicarpeæ foliella.—Head golden, with fuliginous hairs above. Antennæ golden brown, with the tips silvery white. Thorax golden, fuliginous in front, and abdomen golden brown. Fore wings deep orange yellow, with the apical portion dark golden brown and a fuliginous or deep brown patch occupying the basal part of the wing, bordered broadly behind by a circular golden streak, extending from the costa to the inner border at the basal angle. A very oblique somewhat curved golden streak, dark-margined on both sides, extends from the basal third of the wing near the costa, to the middle of the costa. A large golden patch, dark-margined above, extends from the inner angle to the middle of the wing, with the inner margin between it and the circular basal streak dark golden brown. At the beginning of the costal cilia is a golden dorsal streak; cilia dark brown, in certain lights golden brown. Hind wing dark gray, cilia the same.

The larva makes a conspicuous white blotch mine on the upper surface of the leaf of *Amphicarpea monoica* (hog pea-nut) from August to October. The head is pale brown; the body pale green, with brownish maculæ along the dorsum, and round dark brown spots on the ventral surface; the ends of the first ring on the sides are yellowish. After the last molting the body is uniform dark green, the "cast" with dorsal maculæ being left within the mine. The imago appears about the middle of May. This insect is one of the most beautiful I have met with.

NOTE. The reader is requested to make the following corrections in the paper contained in the September number of the Proceedings.:

Page 257, line 9 from the top, after "two," insert *or three*.

Page 260, instead of *A. effrentella* read *A. effrenatella*, and also in the explanation of the plate p. 262.

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